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SHIPBUILDING

CARGO HANDLING

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Transportation by Water

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« EDITORIAL »

Naval Building Program is A Sound Investment

EVERY American, no matter what his personal inclinations toward disarmament may be, should find it possible unreservedly to support the proposal made in the congress for a naval shipbuilding program to bring the American navy up to the strength authorized by the treaties limiting naval armament.

1. It can in no way be considered a warlike move because the other signatories to the treaties, Great Britain and Japan, are building, or have programs to build, the necessary ships to bring their respective navies up to the full strength allowed by the treaties. Unless, therefore, they not only agree to stop present building and to discard existing programs, but also agree to actually scrap some naval tonnage now in commission their respective navies would not be on a parity with ours according to the ratios laid down. In other words, by entirely legitimate action on their part within the terms of the letter and spirit of the treaties, they now have a marked advantage over us. It will readily be recognized that they would not consider for a moment any plan to reduce their own naval forces to correspond to ours.

2. At a time like this, since the proposed naval program represents work that must be done and which should no longer be postponed, it is of the utmost importance that it be undertaken at once to provide much needed employment. The spread of employment would be exceptionally broad. Every state in the Union would benefit. It has been estimated that not less than 85 per cent of the cost of construction finds its way to labor. No one can gainsay that there are industries vital to the life and safety of a nation. Shipbuilding is such an industry. It is essential that we keep our great shipbuilding establishments in a condition of efficiency and immediate usefulness. The proposed naval program would greatly aid in accomplishing this objective.

3. The third reason is one of public economy. At no time in many years could the govern-

ment get so much for so little cost as at the present time. Delay now would most certainly add millions of dollars to the cost of building these ships. The time element is of the greatest importance. It takes about three years to build a cruiser.

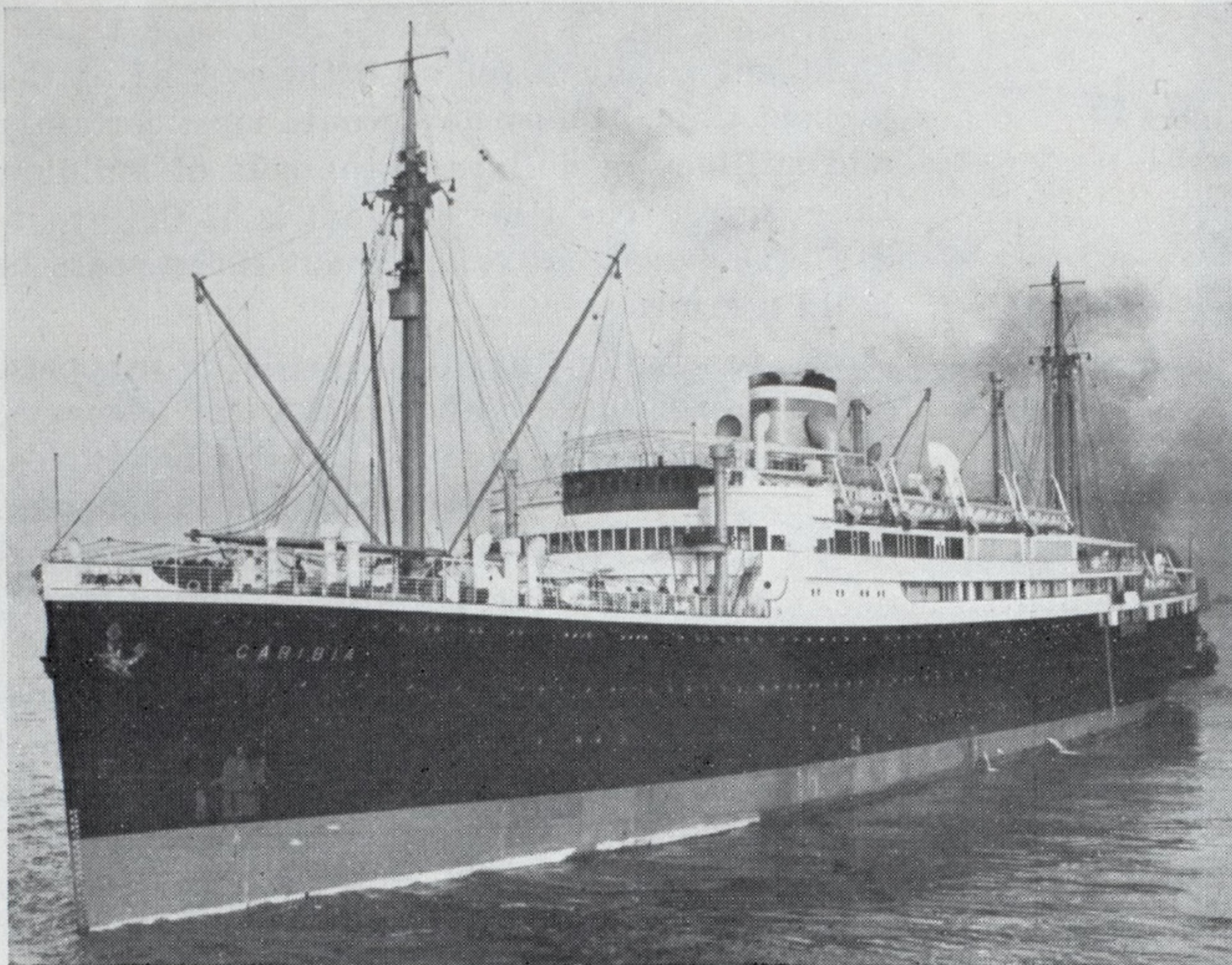
The program of naval shipbuilding proposed by Representative Carl Vinson of Georgia, chairman of the house naval affairs committee, has been studied in detail, and has the support of the secretary of the navy, Claude A. Swanson. It provides for building 27 ships in all, calling for an expenditure of about \$45,000,000 during the first year and a total expenditure of about \$230,000,000.

At the time this is written, it is intended that the navy building program should be included in the general public works bill as it is a sensible measure in the relief of unemployment and in view of the fact that it is for the good of national defense as well. Mr. Vinson in discussing the program with the President pointed out that the facilities of private shipyards are ample for the construction of all of the twenty-seven vessels, that it would mean the employment of a large number of workers and great benefit to the shipbuilding industry.

Action should be taken, and quickly taken, to authorize this comprehensive and practical program of naval shipbuilding. Unless we are going to be willing to take second rank in world affairs, it will be necessary sooner or later to keep pace, in the ratios laid down, with the other naval powers. It is obvious that no other course is open. We cannot weaken our hand while other powers strengthen theirs. If it were possible to arrive at parity according to the ratios agreed upon, by scaling down all around, we might conceivably do away with the navy altogether except for police duty. All we are seeking is an even break with the other powers. It is ruinous to advocate any other course. Our interests and position as a world power will be jeopardized unless we take action and prompt action to keep our navy up to the standard allowed under the treaties. The whole nation is surely behind such a program. Since we cannot have parity without building ships, we must build ships. There is no other way.

CARIBIA

First of Two, Twin Screw, German Motorships



Caribia, twin screw, passenger and cargo motorship, Hamburg-American Line service between Germany, West Indies and Central America, sailed on maiden voyage Feb. 25

WITH an increasing traffic in passengers and cargo between Germany and the West Indies and Central America, the Hamburg-American line in 1928 added to this service two new passenger and cargo motorships ORINOCO and MAGDALENA. The two new ships quickly became popular, and in 1930 the company placed an order, with Blohm & Voss, Hamburg, for building the two sister ships CARIBIA and CORDILLERA. These vessels are combination cargo and passenger, twin screw, motorships with a service speed of 17 knots.

The CARIBIA was launched March 1, 1932, and successfully completed a 12-hour trial at sea on Feb. 4, 1933. She sailed on her maiden voyage from Hamburg to Central America on Feb. 25. The second of the two sister ships, the CORDILLERA, was launched March 4, 1933. Her first service will be on a pleasure cruise to Madeira, Canary Islands and the Azores from Aug. 8 to Aug. 31 after which she will immediately begin regular sailings between Germany and the West Indies and Central America. The principal characteristics of the CARIBIA and CORDILLERA are noted in the accompanying table.

In designing the two new ships advantage was taken of the experience gained in the operation of the two earlier vessels, particularly as re-

gards the comfort of passengers and the general efficiency of service in tropical waters. A flaring stem and rakish lines forward are characteristic features giving a particularly attractive outward appearance.

A striking application of recent progress in shipbuilding is the extent to which electric arc welding has been used in their construction. It is said that these two ships are the first in which electric arc welding has been used in the construction of the hull and the chief connecting members. By the use of welding in this manner in place of riveting it has been possible to reduce the weight of shipbuilding steel and consequently the weight of the ship by more than 200 tons.

To minimize rolling, bilge keels have been fitted on the CARIBIA and the CORDILLERA is having anti-rolling tanks installed.

Features of Hull Construction

The main propelling machinery, two 8-cylinder, double acting, two-stroke cycle, solid injection, diesel engines of the Blohm & Voss—M.A.N. type built by the shipbuilder, is described in detail later in this article; as is also auxiliary power and auxiliaries.

Four continuous steel decks extend from stem to stern and in addition there is also a partial deck forward. Conforming with regulations govern-

Principal Characteristics

Builder.....	Blohm & Voss, Hamburg
Owner.....	Hamburg-American Line
Launched.....	March 1, 1932
Sistership, Cordillera, Launched...	March 4, 1933
Sea trials, Caribia.....	Feb. 4, 1933
Entered service, Caribia.....	Feb. 25, 1933
Cordillera, to enter service.....	Aug. 8, 1933
Length overall, feet, inches.....	524 4
Length between pp., feet, inches.....	494 4
Beam molded, feet, inches.....	65 7
Depth molded, to B deck, feet, inches....	40 3
Depth molded, to C deck, feet inches....	31 8
Gross tonnage.....	12,049
Cargo capacity, cubic feet.....	343,824
Capacity, fresh water tanks, cu. ft.....	40,041
Bunker capacity, cubic feet.....	66,560
Propelling machinery, twin screw, two 8-cylinder, double acting, two cycle, diesel engines, total brake horsepower.	11,000
Passenger capacity, in three classes.....	419
First class.....	206
Second class.....	103
Third class.....	110
Crew, total number.....	204
Service, Germany, West Indies, Central America	
Speed in service, knots.....	17

ing the safety of ships, the hull is subdivided by nine watertight transverse bulkheads up to the C deck. A forward collision bulkhead extends up to B deck.

Aft of the collision bulkhead in the forward portion of the ship are three large cargo holds. Immediately aft of No. 3 cargo hold is the oil bunker section. Directly aft of the bunker space is the auxiliary engine room, the main engine room and the refrigerating machinery. The latter is located between the fresh water tanks and below rooms for cold storage and dry provisions. The remaining bulkheads divide the after part of the vessel into three cargo holds and after peak. On D deck in the stern is the steering engine room in which is installed a 70-horsepower Atlas-Werke steering engine. The hand steering apparatus for emergency use, is located on the A deck.

Watertight doors in the bulkheads in the lower part of the ship are opened and closed by a hydraulic system of Atlas-Werke type, controlled from the bridge. Each watertight door can also be independently operated locally by means of a hydraulic cylinder.

In addition to the usual fireproof bulkheads prescribed by the international convention for safety of life at sea, smoke bulkheads are installed, isolating the chief landings for the stairways. For fire extinguishing purposes there are two sys-

tems; one using water and the other carbon dioxide gas.

The water main system is served by deck wash, fire extinguishing, and bilge pumps. A large number of hose connections are conveniently provided in various parts of the ship. The CO₂ fire extinguishing system is connected with a smoke signaling device for the cargo and baggage holds, the mail rooms and provision storage rooms. This system is used for extinguishing fires in the spaces mentioned in order to prevent damage by water. Pumps serving the fire extinguishing system are distributed in different locations so that they cannot all be out of commission at the same time. A large number of hand fire extinguishers are also installed. For extinguishing fire in the engine room there is a large fire-foam plant and a number of hand operated foam extinguishers.

The smoke signal system is designed on the optical-acoustic principal of Walther & Co., and terminates in the wheel house on the bridge. The pipes serving the smoke signaling system are also used for conducting the CO₂ gas to any hold or compartment as may be necessary.

Life saving equipment consists of ten lifeboats. Eight of these lifeboats have a capacity of 75 persons each and the remaining two, 25 persons each. Lifeboats are of steel construction with the exception that one has been built of reinforced iron. In place of the usual air tanks the lifeboats are equipped with sheet steel cells welded to the shell of the boats. The air contents with this construction is some 50 per cent larger than for the ordinary air tank construction.

Navigating and Cargo Handling

Among other safety devices are an emergency bilge pump located in the main engine room and an emergency generator on B deck.

The bridge of the Caribia is located forward on the boat deck. In addition to the prescribed magnetic com-

passes, a gyro compass and three repeaters are installed. The gyro compass is situated near the steering wheel and a repeater is located at either extremity of the bridge and one near the wireless direction finder. Two pedestals for taking soundings by hand are fitted forward and an echo sounding device is also installed. Other navigational equipment consists of a submarine acoustic signaling apparatus, wireless telegraph, wireless direction finder, helm position indicator and recorder, revolution counter, two electrically operated telephone systems for communicating with the forecastle, the stern, and the steering engine room and the main engine room. There are also a number of speaking trumpet connections.

Six hatches are provided for the cargo holds. In way of the promenade deck, hatch No. 4 is divided laterally into two hatch way trunks with flush deck covering on the promenade deck. Forward of the foremast on A deck are located electrically operated three-ton cargo winches for serving hatch No. 1. Aft of the foremast are two 8-ton electrically operated cargo winches serving heavy loads for hatch No. 2.

Just forward of the bridge bulkhead are two 3-ton electrically operated luffing cranes, having a maximum radius of 29 feet 6 inches. These cranes serve hatch No. 3.

First Class Passenger Quarters

First class passenger accommodations are located on decks A, B and C. The dining saloon on A deck also has a gallery on the level with the promenade deck. The dining saloon proper seats 136 persons. The gallery accommodates 60 additional persons. An interesting arrangement of window doors permits passengers while having their meals in the open air to take part in what is going on in the dining saloon. Covered verandas are arranged along the sides of the dining saloon.

An oval shaped social hall, with

oak parquetry floor for dancing, is located aft of the gallery. The adjacent tea pavillion, it is expected, will be popular with passengers when the ship is cruising in the tropics. The pavilion is fitted with a hinged glass ceiling, with a sunsail roof above.

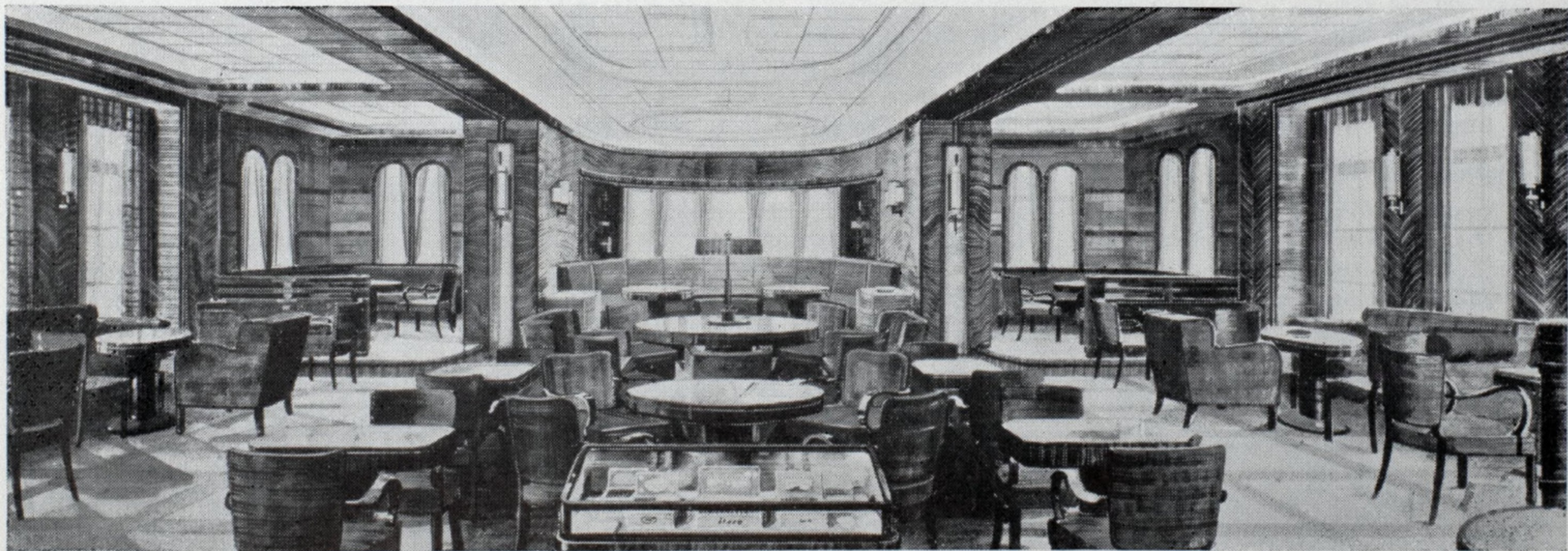
All of the public rooms are arranged so that they may be used together for large scale entertainments. The smoking room and bar occupy the forward part of the promenade deck. This room has a particularly high ceiling and is fitted with comfortably arranged recesses raised above the floor level. Children have a special room on the boat deck and there is also a playground for them. The swimming pool, 26 feet 3 inches long by 16 feet, 5 inches wide, is located on the after end of the promenade deck. The walls are made of multicolored glazed tile and the lighting is from below the water. Adjoining are a massaging room and a room for shower baths.

Other Passenger Accommodations

Promenade decks in the first class are partly fitted with sliding windows. Sales shops are located on the principal landings and in the passage ways. Other facilities include a florist shop on the boat deck, hair dressing rooms on C deck, dark rooms, and a telephone booth near the wireless operating room.

First class cabins are located on decks A, B, and C. Suites consist of sitting room, bed room and bath. The regular double bed and single bed cabins are partly fitted with private bath and lavatory. Altogether there are 150 ordinary beds, 4 spare beds, 14 bed-sofas, 27 children's beds, 8 servant's beds and 30 supplementary beds.

Second class accommodations include dining saloon, seating 76 persons, an attractive smoking room and a comfortable ladies' lounge. The after part of A deck and the veranda around the B deck public rooms serve as a promenade for this class.



Artist's drawing of the first class smoking room on the twin screw motorship Caribia

There are two sheltered open air verandas on A deck. Second class passengers are entitled to the use of the swimming pool at certain hours. Cabins for the second class are on C deck. There are 52 ordinary and 51 supplementary beds.

Third class passenger accommodations include a dining saloon, seating about 40 persons, a separate dining saloon adjoining the former and seating about 20 persons; a smoking room, and a large lounge that may be used for dancing. The cabins for the third class are located partly on C and partly on D decks and contain altogether 56 lower and 54 upper beds.

Two hospitals and one operating room with pharmacy attached are located on C deck. There are two isolation hospitals on the after part of B deck. On B deck are also located a consulting room for the ship's

Parts which must be replaced from time to time such as piston-rod with stuffing-box, pistons and cylinder covers, are of the most modern design. The piston-rods are of Siemens-Martin steel with a tensile strength of 82,500 to 85,350 pounds per square inch. To guard against corrosion by the piston cooling water the piston rods have a larger bore and are lined with copper-nickel pipe (20 per cent nickel), so that the cooling water no longer is in contact with the piston rod.

The two-part piston is fastened and held together with long bolts on two shoulders of the connecting rod. The piston is of simplest form and made of cast steel. The guide piece is made of silumin and the rings of special cast iron 5/16-inch high and 11/16-inch wide.

The piston-rod stuffing box is quite suitable (according to past ex-

The injector pumps are arranged in the usual way; each side of the cylinder has a pump. Each of the pumps is driven by a camshaft set in the center of the column. The starting of oil injection depends upon the position of the pump drive cam. The oil flow is stopped by the opening of the overflow valve; this is also controlled by the regulator. Gages, filters and electric preheaters are connected in the oil delivery line to the injector pumps. The oil delivery line is supplied from special tanks by means of a water pressure system.

How Engine Is Reversed

The engine is reversed by the moving of the camshaft horizontally whereby the respective cams for pumps and air inlet are in either the ahead or astern position as desired. An oil pressure cylinder with the oil under air pressure serves to shift the camshaft. According to the direction in which the camshaft is to be shifted, one or the other of two air chambers receives compressed air thereby moving the piston of the reversing mechanism up or down.

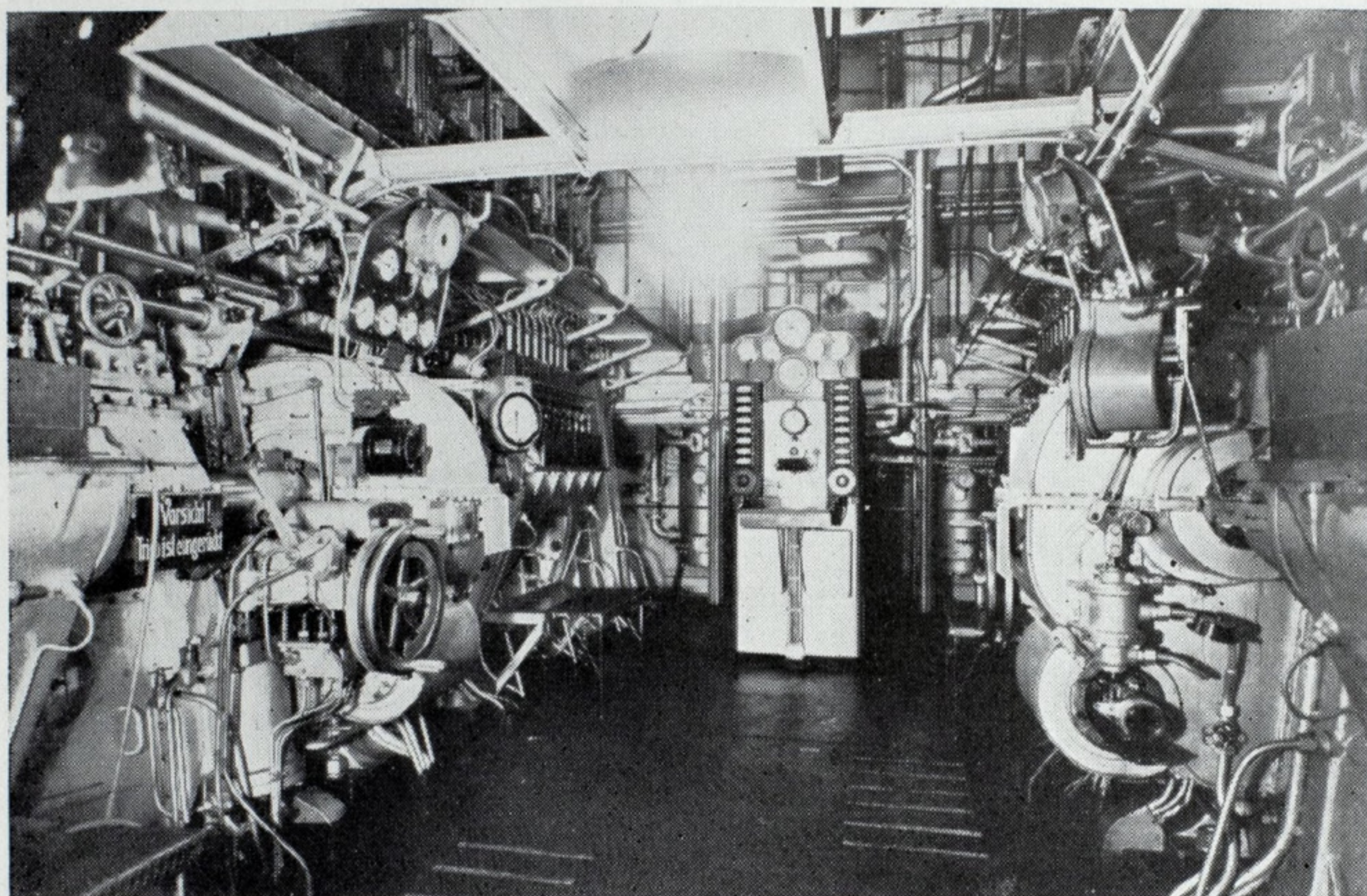
Exhaust ports are arranged above and below the air inlet ports as is usual on M.A.N. engines. The exhaust gases of each engine pass through a steam boiler. The steam produced operates a turbine which in turn drives a 250 kilowatt generator. A part of the steam is also used for heating and cooking purposes.

The main shaft is set in a Michell thrust bearing with support bearings in front and back. Connected to this is the tunnel line shaft, each section of which has two support bearings. Construction of the bearings and shafts conforms to the usual practice in shipbuilding. The bearings in the shaft tunnel are lubricated by a special oil-line, fed by a small gear type pump driven by the tunnel shaft. Oil flowing out of the bearing returns to a settling tank where it is filtered and cooled. The propeller shafts rest in lignum vitae bearings; each shaft sleeve is in one piece.

Auxiliaries for Main Engine room

The four-bladed bronze propellers are built up with a barrel shaped hub made of cast steel, upon which the bronze blades are mounted, the blade flanges being countersunk in the hub so that no edges protrude and a smooth passage of water is assured. A torsion-meter—Frahm system—is installed on each shaft line to determine the actual power being transmitted.

At the after end of the main engine is an electric driven jacking gear of worm type, the ratio giving one revolution in approximately five minutes. The electric motor has a capacity of 10.5 kilowatts.



Motorship Caribia engine room. Maneuvering stations for two 8-cyl. diesel engines

physician, a waiting room, a pharmacy and adjoining the latter a room for a hospital nurse.

Sound film installations are available for passengers of all three classes. There is also a musical relay installation for second and third class passengers. First and second class service rooms are located aft of the first class dining saloon.

Main Propelling Machinery

The vessel has two propellers, each driven by an 8-cylinder airless injection double-acting, 2-cycle M.A.N. diesel engine. Each motor develops 5500 shaft horsepower at 138 revolutions per minute and has 23.62-inch bore and 35.43-inch stroke. The same type of engine has been installed in the GENERAL OSORIO in the South American trade and has given excellent results. The construction particulars of the engine are shown in the accompanying cross section sketch.

periences) insofar as the rings are made of special cast iron. They are easily overhauled and are a guarantee of tightness. The play in the lower rings is sufficient to wear-in well so that after a comparatively short time the rings fit exactly on the piston-rod and their surfaces upon one another.

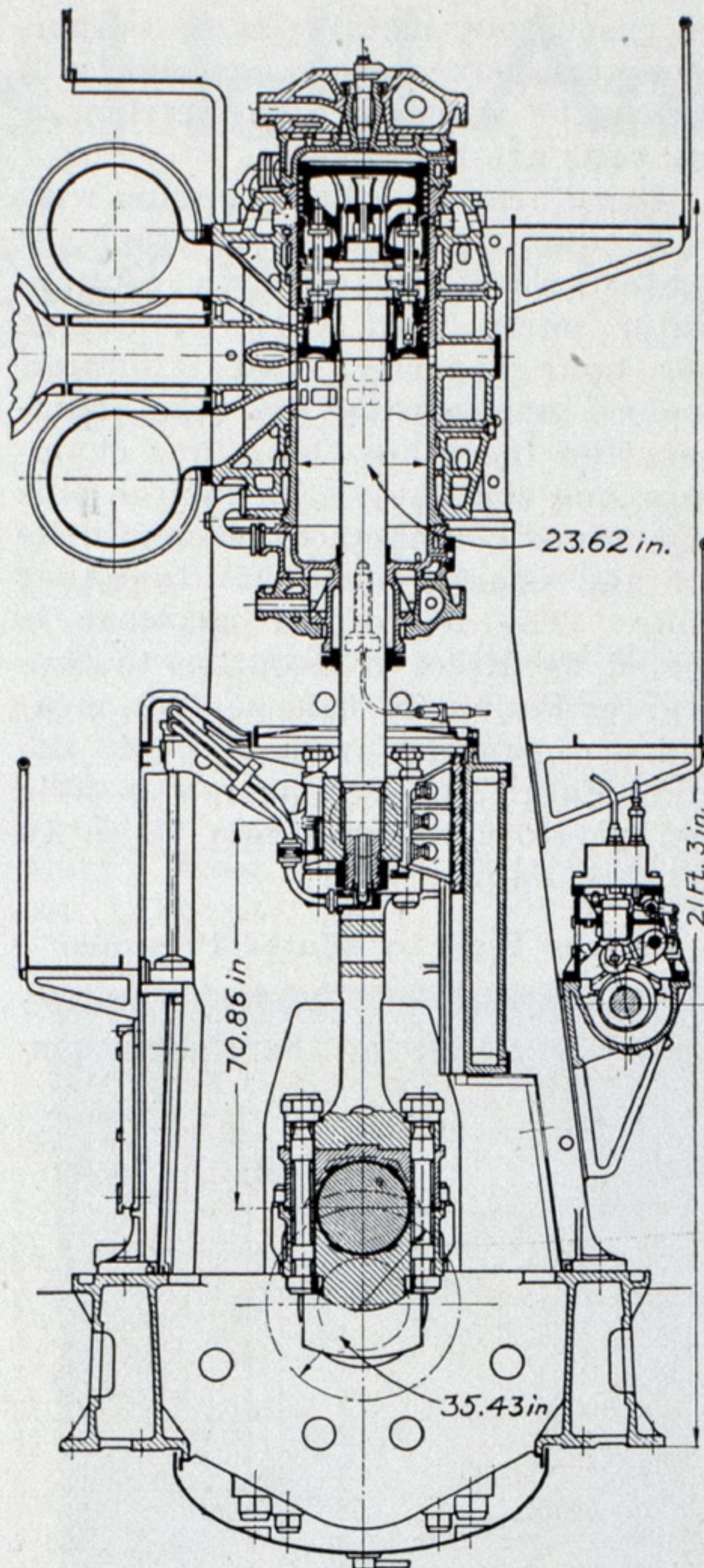
The cylinder cover is in two parts, the inner part exposed to the combustion consists of cast steel; the outer part is of cast iron. After the outer part is removed the cooling water chambers can easily be cleaned. Also, any possible cracks, caused by heat expansion, can easily be welded. In order to protect the piston-rod from high temperatures the inner piston is provided with a short tube made of "nichrotherm" metal.

Cylinders, covers and pistons are cooled by fresh water, which is re-cooled in special coolers to 95 degrees Fahr.

Two electric driven rotary pumps of vertical type are provided for freshwater cooling, each of which has a capacity of 750 tons per hour against a head of 98 feet. Two parallel connected freshwater-return coolers of horizontal type are provided each of which has a cooling surface of 3500 square feet. The freshwater flows over the pipes through which the seawater circulates. The cooling pipes consist of a copper-nickel alloy with 20 per cent nickel. Both seawater cooling pumps are vertical types with a capacity of 800 tons per hour against a head of 65.6 feet.

Two electric driven pumps, each with a 70-ton per hour capacity, circulate the lubricating oil to the main engines. These pumps draw the oil from the double bottom oil tanks and pass it through double filters, oil coolers and then to tanks from which it flows through a main line to the various lubrication points of the engines. Even in the tropics one oil pump is sufficient for both engines, the other being held as a stand-by ready for immediate operation. Each oil cooler has 485 square feet of cooling surface. The oil flows around the tubes through which the seawater circulates. These pipes are of a copper nickel alloy and are rolled tight in bronze tube sheets.

Air for maneuvering is supplied by two high-pressure compressors with a capacity of 282 cubic feet per minute, driven by geared motors. Scavenging air for each motor is supplied by rotary blowers each of which normally draws 23,300 cubic feet per minute and with a maximum water column pressure of 55 inches. Each blower has two 100-kilowatt motors one of which serves as a spare. Each, furthermore, has a special regulator to govern the speed from 1800 to 2600 revolutions per minute. Relays are connected with the maneuvering device of the main engines so that changing the speed of rotation of the engines increases or decreases the speed of the blowers. When stopping and starting, the electrically actuated throttle



Section, diesel engine, M. S. Caribia

valve in the scavenging pressure line opens and closes automatically.

Electric Generating Plant

In the auxiliary engine room are four diesel driven, direct current generators each of 300 kilowatts capacity and one steam turbine driven direct current 250 kilowatts generator; furthermore, an emergency diesel dynamo of 25 kilowatts is located in the engine room trunk above the waterline. The total current produced is therefore 1475 kilowatts with an output voltage of 230 volts and a line voltage of 220 volts. At sea two to three diesel generators and the turbo-generator are normally in operation; when entering

ports three to four diesel generators and while in port two to three diesel generators; sufficient current is therefore provided for all purposes. The 25-kilowatt diesel generator can supply current for emergency lighting, emergency bilge pump, gyro-compass, wireless plant and siren.

The five main generators are operated in parallel in conjunction with the safety switchboard system of Carl Meyer. By means of this a continuous uninterrupted flow of current is assured for all important current requirements even if a generator fails or becomes overloaded.

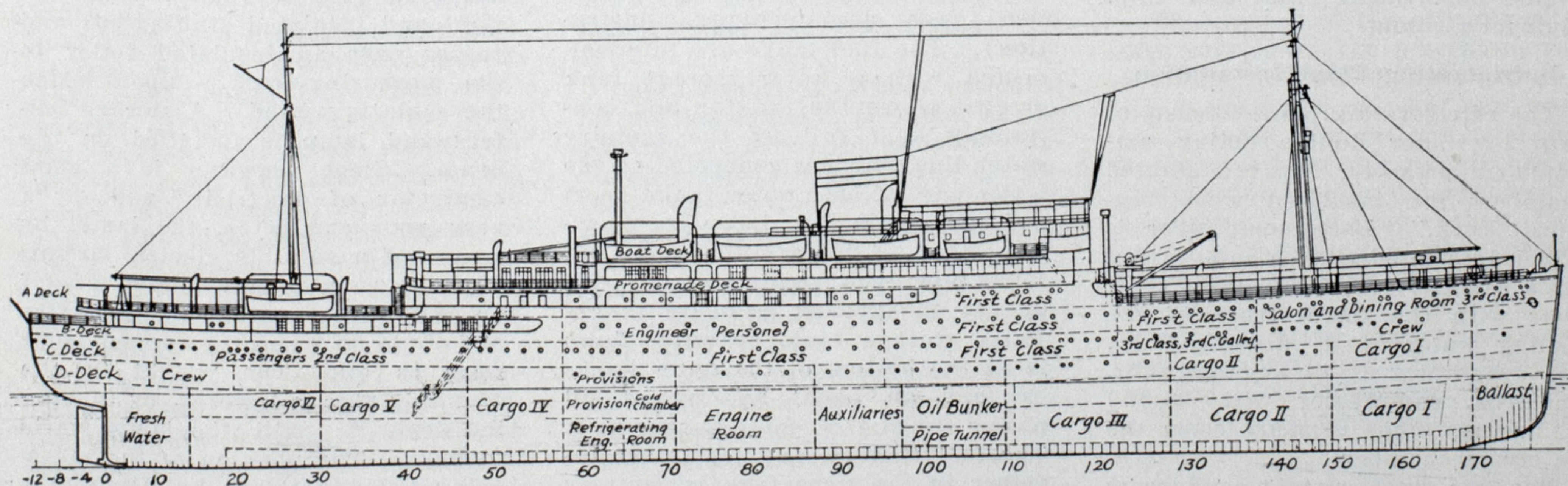
The auxiliaries, wherever possible, are electric driven; the following are installed:

	Horse-power
37 Motors, ventilation, total.....	118
60 (Approx.) motors for auxiliaries	2593
50 Motors, deck machines, total....	717
40 Motors, various purposes, total	82
187 Electric motors, total.....	3510

Large motors in the engine room are provided with two auxiliary power actuated multiple switches instead of the usual single switches. By eliminating all single switches considerable space has been saved in the engine room. For starting and stopping the motors push-buttons are used.

The following motors are connected to the two automatic switches: two scavenging blowers (four motors), two starting compressors, two seawater cooling pumps, two freshwater cooling pumps, two lubricating oil pumps, one bilge and fire extinguishing pump, two sanitary and fire extinguishing pumps and two refrigerator compressors. The principle of multiple starting is also applied to the small motors in the engine room as well as the ship's ventilators, but for each group a manual multiple switch is provided. After completion of the starting operation the motor is returned to starting position by a lever reversing switch.

The galley equipment, ranges, baking ovens, water boilers, etc.,



Twin screw combination passenger and cargo Motorship Caribia, Hamburg-American Line. Speed 17 knots

are electrically heated. The total energy consumed for this installation is approximately 428 kilowatts. The crew quarters and adjacent rooms are heated by electricity so that it is unnecessary to put the auxiliary boiler in operation while the vessel is in port during the winter. In all there are 120 electric radiators totaling 165 kilowatts and 33 hot-water heaters (300 watts each) installed above the second class cabin washbasins.

For illuminating purposes more than 3000 lamps are used ranging from 25 to 500-watt and totaling 120 kilowatts.

Telegraph and indicating lines are provided for the engine room telegraph installation. An 18-point direct current system also is employed in connection with the rudder angle indicator with repeaters in the engine room and wheelhouse; the propeller revolution counter with re-

of rust proof metal. Both evaporators are box shaped containers in which the seamless steel refrigerating coils are installed.

There are three brine pumps with 530 cubic feet per hour capacity against a 98-foot head; a cooling-water pump with 1412 cubic feet per hour capacity; two irrigation coolers, one serving the plus chambers and the other the minus chambers, one ventilator each for the plus and minus chambers to circulate the air and change same 25 times per hour. The ice cream chamber is cooled by direct evaporation to zero degrees Fahr.; the fish, poultry, meat and ice chambers from 28 to 40 degrees Fahr.; the egg, beer, vegetable and potato chambers from 35 to 46 degrees Fahr.

Deliver Fuel by Water Pressure

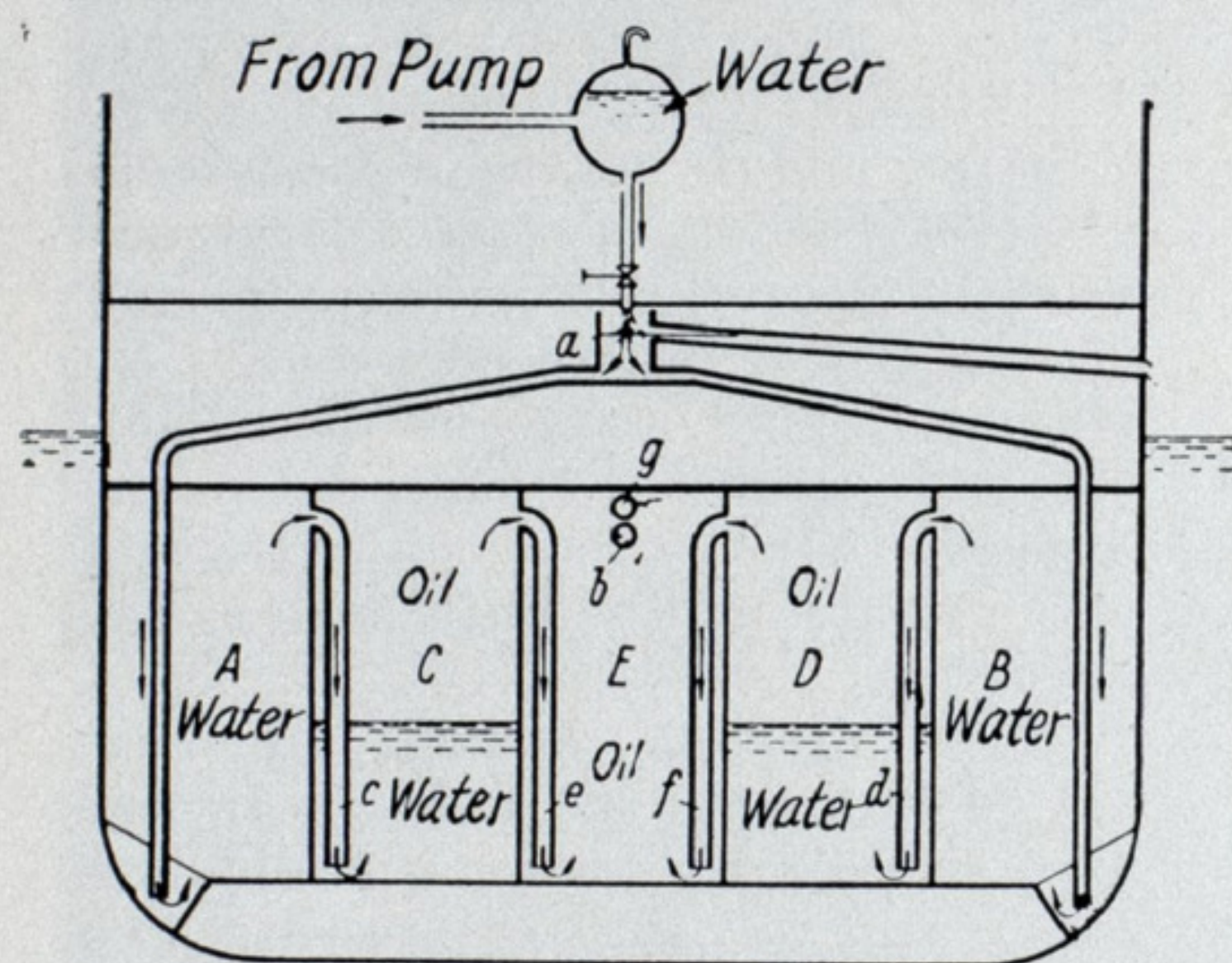
In conclusion special mention should be made of the system em-

since it is impossible for them to mix as the lighter oil always floats on top of the heavier water.

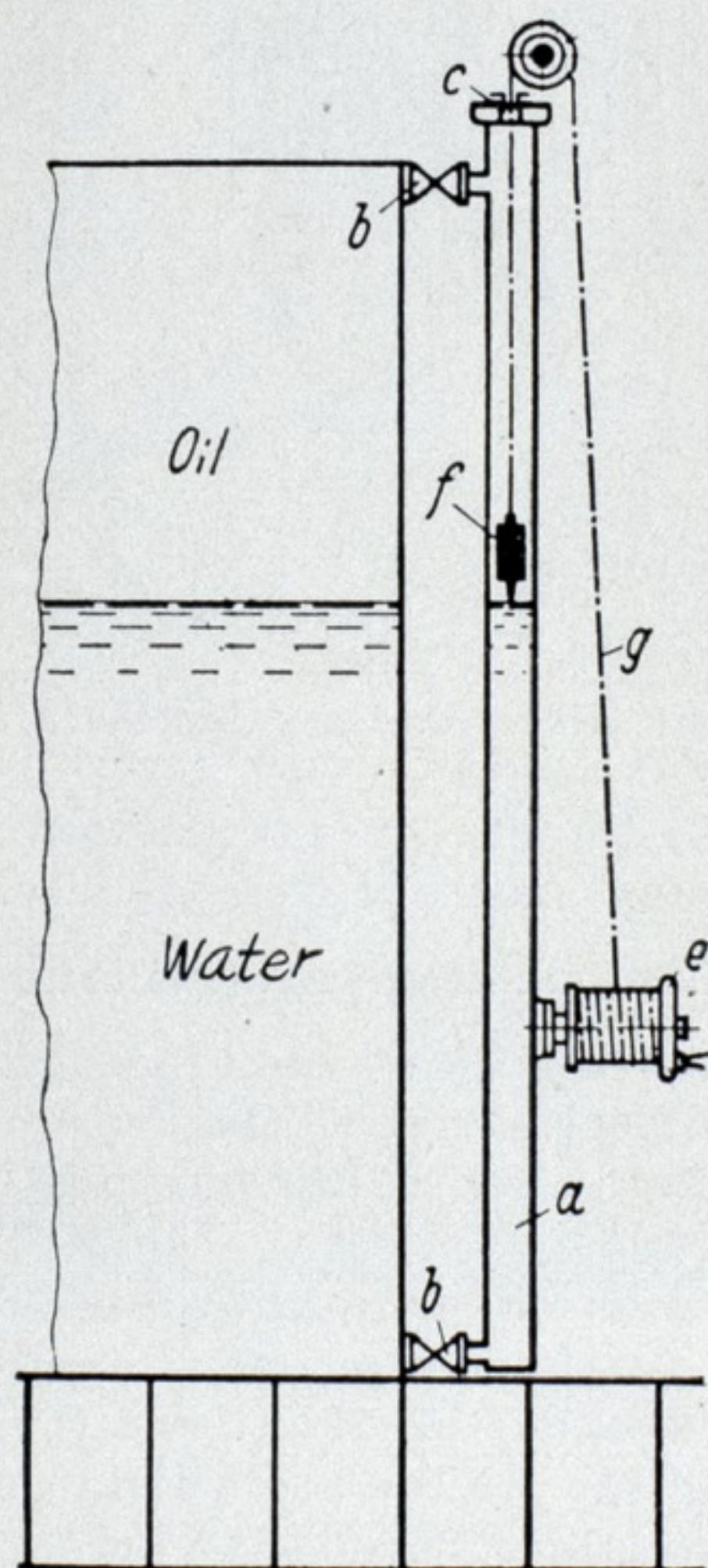
After the removal or consumption of fuel has caused the outer bunkers A and B to become filled with water, then a further consumption of oil allows the entrance of water, through drop-pipes c and d; to the bunkers C and D which are still filled with oil and where the fuel also gradually is displaced. Finally the center bunker E becomes filled with water, through droppipes e and f, while the oil leaves this bunker at g. When the sounding device described below shows that the lower level of the oil (where oil and water meet) has reached the maximum level permitted then oil is again pumped through the filling line at B in the center bunker whereupon the seawater in the bunkers reverses its direction and finally flows overboard through the overflow pipe of the water storage tank. The pumping of oil ceases after the oil finally reaches its deepest point in both outer bunkers A and B.

In this way the oil bunkers continually remain filled with fuel or water. A change in the trim of the ship does not occur during the consumption of fuel nor are there any of the disadvantages of partly filled tanks made noticeable when the vessel rolls. The fuel flows directly from the bunkers to the motors and it cannot be disturbed by the rolling of the vessel. It has sufficient time and opportunity to settle. Impurities sink the bottom of the bunkers and the clean oil is drawn from the highest point. Daily supply pumps and day-tanks therefore become unnecessary.

To determine the amount of fuel in the bunkers a special sounding device, also shown in accompanying illustration, has been provided. A sounding pipe (a) is connected to each bunker and separated from the bunker proper by a self-closing valve b on top and bottom. A weight f, with a polished metal point at the bottom, is suspended in the sounding pipe from a steel cable. This cable comes out at the top of the sounding pipe through a small oil tight and insulated stuffing-box and passes over an insulated roller to the measuring-drum e upon which the cable is wound. A storage battery and lamp is installed on the drum. Since seawater is a good conductor of electricity and oil a very poor conductor, the lamp, by means of a suitable electric circuit, burns as soon as the contact point f on the weight enters the seawater and shuts off when the contact point rests in oil. The weight in the sounding pipe is lowered, by turning the drum e, until the lamp starts to burn. The position of the measuring drum indicates, by means of a reading, how much oil is in the tank.



DIAGRAMMATIC sketches showing how the system of water pressure for diesel fuel oil operates on the Motorship Caribia. Above—Fuel oil storage tanks under this system are always full with a combination of water underneath and oil on top. As the oil is used, more water is admitted. When the oil is replenished the water flows overboard. At right—Showing method of sounding tanks for amount of oil present



peaters in the engine room, wheelhouse and chief engineer's cabin and there is a loud speaker phone installation connecting the wheelhouse with the engine room, steering engine room, bow and stern and also connecting the engine room with the engine department office and chief engineer's cabin.

Refrigerating Plant Installation

The refrigerating plant consists of two 2-cylinder double acting ammonia compressors. The refrigerated chambers are insulated with "expansit cork." Each compressor is driven by geared electric motors and has a capacity of 218,240 B.t.u.'s per hour with the temperature of the cooling water at 86 degrees Fahr. and evaporator at 14 degrees Fahr. One NH_3 compressor with 31,750 B.t.u.'s per hour capacity cools the ice cream chamber.

The two cross current condensers have removable inner tubes, made

employed to deliver fuel to the injection pumps by means of water pressure. The difficulties which formerly arose in the usual methods of handling diesel fuel should be eliminated by this water follow-up system, (see accompanying illustration). The fuel tanks are interconnected with a water storage tank erected above the tanktop and continually kept full by the sanitary water line which is connected to the lower part of both outer tanks (port and starboard) A and B. Let us assume that all five are filled with oil. If we now open supply valve g, then due to the greater pressure in the water storage tank, seawater flows in at the bottom of the outer bunkers and an equal amount of oil passes out of the center bunker at g. The fact that oil and water are together in the same tank is contrary to our custom but this is harmless

Lake Carriers Hold Annual Meeting

Expect Better Demand for Tonnage

By A. H. Jansson

HOPEFULNESS of somewhat better times ahead was evident at the annual meeting of the Lake Carriers' association held at Cleveland, April 20. Having in 1932 experienced the lowest movement of bulk cargo in thirty-one years, the vessel men of the Great Lakes at this year's meeting inaugurated another season with the feeling that the worst is over and that improvement is in sight. The stockholders' meeting, represented by about 80 per cent of the membership, was very brief and dealt largely with routine matters. The annual dinner, which in the past has been a regular feature, was omitted.

Though nothing was said about the condition of business, there are some definite signs that the coming year will provide more cargoes and will require more vessels in operation. No less than forty-two vessels belonging to the association's membership have already been commissioned presumably with some profitable employment in sight. This number does not include the 15 vessels belonging to the largest fleet which are expected to go into commission shortly. It is expected that by May 1 the total number of vessels in commission will be materially in excess of the 68 vessels that were in commission on this date a year ago.

Expect Increased Ore Movement

To say the general consensus of opinion seems to be that the ore movement this year may be double that of last year or about 7,000,000 tons does not mean much in the employment of vessels because this would be only slightly over one-tenth of the ore movement in the year 1929, or a little more than one-seventh of the ore movement in 1930 and a little more than one-quarter of the movement in 1931. However, it will mean something, and the stone and coal movements which were respectively 3,928,840 and 24,857,369 tons are likely to show an increase. The grain movement on the other hand, unless present indications fail, will be adversely affected by the imperial preference agreement favoring, by monetary subsidy, the movement of Canadian grain in British carriers. A complete record of the tonnage of bulk cargo movements on the Great Lakes for the year 1932 as well as

for the preceding nine years will be found in the February Marine Review, page 34.

The opening recommended drafts through all channels and harbors of the Great Lakes is 17 feet, 9 inches. Last year the opening recommended drafts for vessels was 18 feet for St. Mary's river and 18 feet, 6 inches for Lake St. Clair. The average



Capt. Joseph S. Wood

President, Lake Carriers Association

recommended drafts for 1932 were 17 feet, 11 inches for St. Mary's river and 18 feet, 5 inches for Lake St. Clair. The latter is practically the same as in 1931, but otherwise these are the lowest mean annual drafts for twenty years. And now at the beginning of the season of 1933 the recommended draft is 2 inches under the low average for 1932.

Capt. Joseph S. Wood, president of the association, presided at the meeting. After the quickly completed business of approving the annual report, the re-election of officers and directors, the names of which are noted in an accompanying table, the meeting was addressed by its distinguished general counsel, Newton D. Baker.

Mr. Baker reviewed some of the problems which may come up during the year due to possible government action and recommended that the deliberate views of the association be prepared so that they may

be presented to the various government agencies concerned if and when any definite action is imminent.

These suggestions of government action are still in rather tenuous form and may or may not materialize, Mr. Baker pointed out. One of these is the President's order to the war department to reduce its expenditures by \$144,000,000. He did not believe that even this very drastic reduction would affect contracts now under way for improvements to navigation on inland waterways including the Great Lakes. Should the order affect any project of this kind on the Great Lakes, the association ought to be prepared to marshal the facts and needs of the situation. No difficulty is anticipated on this score.

Effect of Possible Legislation

Another matter may have to engage the serious attention of the association, Mr. Baker pointed out. This is the suggestion that crews on lake ships should be increased to allow the three watch system followed on ocean shipping. Though conditions are totally different on the Great Lakes and the present method works no hardship on the men, the universal search for ways of providing additional employment might have the effect of setting aside all reason and justification in order to make more jobs. The association must be prepared to defend the present system on the basis of both social fairness and economics. Such a change would mean an additional financial burden and other serious practical difficulties such as increased accommodations and alterations that might be required.

The essence of the attitude of the lake carriers at the present moment is similar to that of other groups in the uncertainty of what the future has in store. On the one hand there is hope, without any definite basis of justification, for an improvement in conditions. On the other hand, there is a feeling of the necessity for facing facts and to be prepared to carry on under difficulties not greatly different and perhaps even worse than last year, though it must be said that the tendency is stronger toward an anticipation of better times.

Capt. R. W. England, chairman of the shore captains' committee, re-

ported that the committee had held six meetings and in addition to making recommendations as to the drafts for loading for channels and harbors had taken action to limit the recommendations of the navigating committee to matters which are essential to safe navigation. This has been done in order to cooperate with the government in its efforts for economy. The shore captains' committee, therefore, recommended to the executive committee only such work as was found to be necessary for safety.

Reference was made in Captain England's report of the formulation of rules for the navigation of the Amherstburg as a two-way channel, this channel taking the place of the Livingstone channel which was closed. These rules were found to be entirely satisfactory except to the fast passenger steamers. They have been recently modified accordingly, and will go into effect when approved by the Canadian government. He also referred to the satisfactory operation of the rules governing the navigation of the Middle Neebish as a two-way channel. The West Neebish will again be re-opened as a down bound channel this summer which will eliminate the necessity of using one channel for traffic both ways.

Captain England paid the following tribute to the late Capt. Walter G. Stewart: "This committee for the first time since it was organized by the Lake Carriers association in 1921 has lost through death one of its most valued members Capt. Walter G. Stewart. He brought to the committee the benefit of many years' experience as a master and a long experience ashore as a marine superintendent, together with a personality which always demanded a square deal and full consideration of every subject which came under the observation of the committee. His broad views in regard to all dealings with employes on board ship, at all times enlisted his very best thought."

The committee appreciating the prevailing economic conditions has opposed all projects not considered essential so that no financial burden has been placed upon carriers.

George M. Steinbrenner, chairman of the welfare committee, said the committee had been unable to function in its usual manner, but was prepared to continue the work of other years as soon as circumstances may permit. In the meantime Mr Steinbrenner suggested that the association again publish its bulletin as the only effective means of contact with the ship personnel.

Protective Association Meets

DIRECTLY after the luncheon following the annual meeting of the Lake Carriers' association, the

Great Lakes Protective association held its annual meeting. The Protective association is distinct and separate from the Lake Carriers' association, but is composed entirely of members of that body. The management of the Protective association rests in the advisory committee. The members of this committee, re-elected at the meeting, are: J. S. Ashley, C. J. Peck, C. L. Hutchinson, A. E. Cornelius, F. I. Kennedy, A. E. R. Schneider, John T. Kelly,

the association and the fourth year during which 50 per cent has been reserved from conventional insurance. While weather and ice conditions were favorable from early opening of the navigation season, the generally unfavorable business conditions adversely affected the lake trade and with the exception of some early coal cargoes necessary to restore stocks that had been depleted during the winter, very little tonnage was moved before the normal opening of the season.

Sixty-three Vessels Commissioned

Of the ninety-six vessels in the membership, sixty-three were placed in commission during the season, twenty-one having started in April, fifteen in May, three in June, seven in July, four in August, twelve in September and one in October. Five others went out on special trips at rates arranged with the underwriters. A few additional vessels made trips at owner's risk and twenty-eight were not fitted out.

At no time in the history of the association has there been so small a movement of freight as in the year 1932, though the percentage of the association's vessels in operation, approximately 65 per cent for at least part of the season, compares favorably with the percentage of the whole lake fleet in commission. The Three major losses, accounting for 30 per cent of the total of all the losses for the year, were suffered with the navigation season barely under way. All three of these losses are considered as having been avoidable had careful navigation and proper observance of the safety rules been exercised.

Losses Proportionally Heavy

During the entire season there were 52 losses, of which four were strandings in harbors, one in St. Mary's river and two in the open lakes. Three groundings occurred in harbors, nine collisions with other vessels in harbors, 14 striking fixed objects such as docks and piers, six striking obstruction, one stress of weather damage, two losses from fire, and ten mooring damages at Buffalo. The total number of accidents compared closely with the number in 1931 when 54 losses were suffered with 76 vessels in commission. The total cost of the 1932 damages, however, exceeded the previous year by 60 per cent. Under present estimates \$60,658 or 19 per cent of the initial contributions will be returned to subscribers.

The officers of the Great Lakes Protective association, and it is a foregone conclusion they will be re-elected by the advisory committee, are: J. S. Ashley, chairman; George A. Marr, secretary; R. W. England, treasurer; J. A. Armstrong, assistant secretary; and Robert G. McCreary, counsel.

Officers Lake Carriers' Association

President
JOSEPH S. WOOD

Vice President
L. C. SABIN

Vice President
Secretary and Treasurer
GEORGE A. MARR

General Counsel
NEWTON D. BAKER

Executive Committee

Joseph S. Wood, A. E. Cornelius, A. F. Harvey, C. L. Hutchinson, H. K. Oakes, A. E. R. Schneider, Frank Armstrong, G. A. Tomlinson, George H. Warner, H. S. Wilkinson, W. J. Conners Jr.

Alternates

J. Burton Ayres, J. J. Boland, H. G. Dalton, A. H. Ferbert, Warren C. Jones, John T. Kelly, F. I. Kennedy, Walton H. McGean, W. P. Schaufele, A. C. Sullivan.

Directors

Joseph S. Wood, Chairman
Cleveland

J. S. Ashley, J. Burton Ayers, Newton D. Baker, S. B. Cady, C. C. Canfield, H. G. Dalton, R. W. England, A. H. Ferbert, A. F. Harvey, C. L. Hutchinson, Chas. O. Jenkins, Warren C. Jones, John T. Kelly, Geo. S. Kendrick, F. I. Kennedy, Geo. A. Marr, Walton H. McGean, H. K. Oakes, R. J. Paisley, C. J. Peck, L. C. Sabin, W. P. Schaufele, A. E. R. Schneider, Geo. M. Steinbrenner, Frank Armstrong, H. C. Strom, Baird Tewksbury, G. A. Tomlinson, R. B. Wallace, Geo. H. Warner.

From Other Cities

J. J. Boland, A. E. Cornelius, W. J. Conners Jr. and J. E. McAlpine of Buffalo; H. F. Hughes and A. C. Sullivan of Chicago; J. G. Munson of Rogers City; W. P. Snyder, Jr. of Pittsburgh and H. S. Wilkinson of New York.

R. W. England, R. B. Wallace, George M. Steinbrenner, and George H. Warner. The new member elected is R. J. Paisley. The advisory committee in a later meeting will elect the officers of the association and it is expected that they will be the same as last year.

As chairman, J. S. Ashley, presented a brief summary of the annual report, copies of which were distributed to the members of the advisory committee present and a little later will be sent to all members.

The year 1932 was the twenty-fourth year since the inception of

San Francisco, New Orleans, U. S. Cruisers Launched

THE active part taken by government navy yards in the present limited program of naval ship-building is emphasized in the recent launching, within approximately one month of each other, of two treaty cruisers for the United States navy; one at Mare Island, Calif., and the other at Brooklyn, N. Y.

Construction of the U. S. S. SAN FRANCISCO, a heavy cruiser of 10,000 tons standard displacement, coming within the provisions of the London treaty of 1930, was authorized Oct. 11, 1930. The keel was laid Sept. 9, 1931 at the United States navy yard, Mare Island, Calif. The new cruiser sponsored by Miss Barbara M. Bailey of San Francisco was successfully launched on March 9, 1933.

to her berth in 91 seconds from the time of starting. Trunnions were used in the forepoppets for pivoting. The ship reached a maximum speed on the ways of about 24 feet per second, or 14.4 knots. The information given here on the U. S. S. SAN FRANCISCO was furnished through the kindness of Rear Admiral J. M. Reeves, U. S. N. commandant of the Navy Yard at Mare Island.

Cruiser New Orleans is Launched

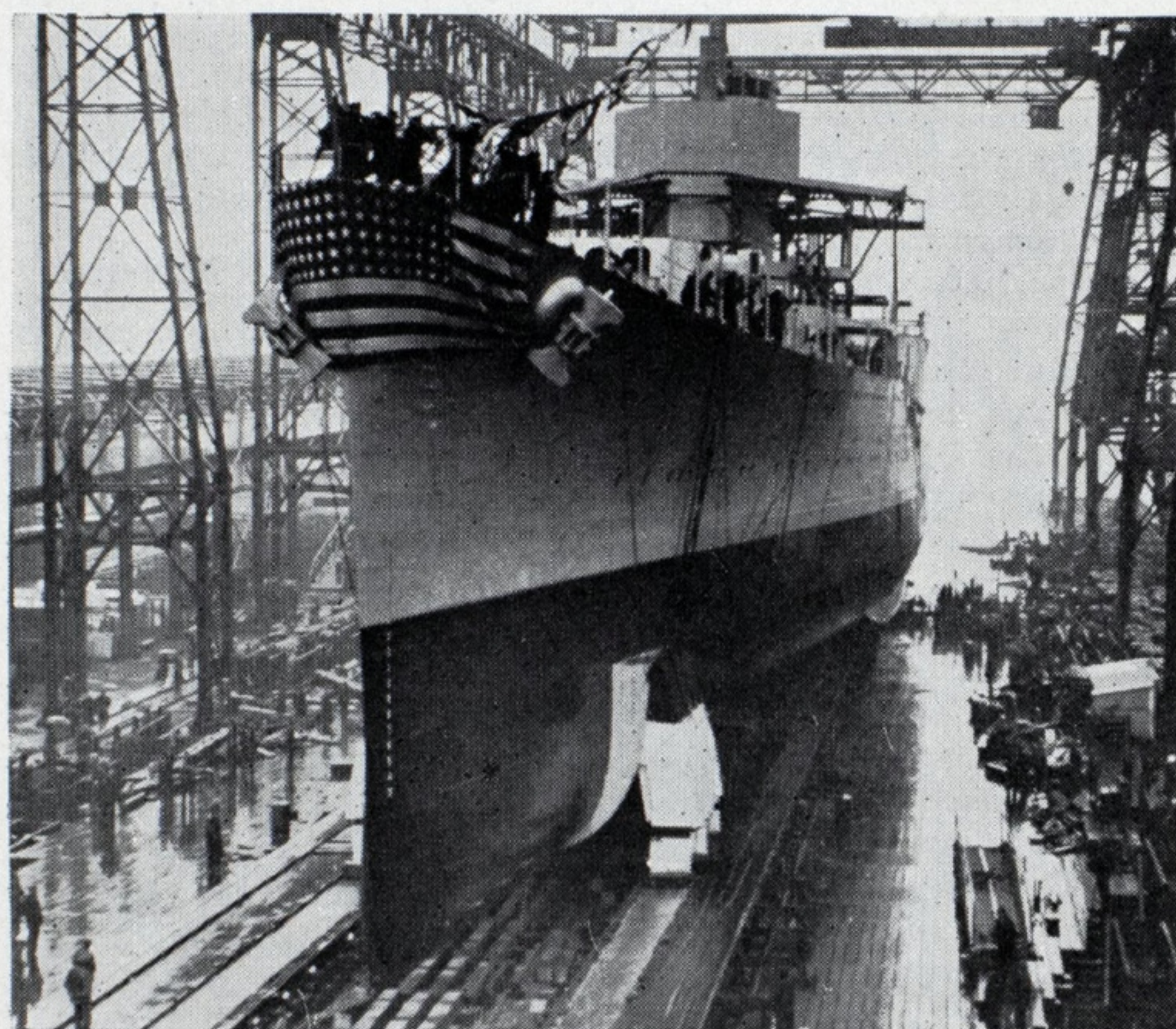
On April 12, 1933 the 10,000-ton treaty cruiser, U. S. S. NEW ORLEANS, sponsored by Miss Cora Stanton Jahncke, youngest daughter of former assistant secretary of the navy, Ernest Lee Jahncke, was launched at the Brooklyn, N. Y. navy yard. The new

cruiser was authorized Feb. 13, 1929, and is expected to go in commission about February, 1934. Her length at the waterline is 573 feet; the extreme beam is 66 feet, 10 inches and the mean draft on 10,000 tons displacement, it is estimated will be 19 feet 6 inches. Her armament will consist of nine 8-inch guns in three turrets, eight 5-inch guns, eight anti-aircraft guns and six 21-inch torpedo tubes. Deck space has been arranged for four airplanes to be launched by catapult. The NEW ORLEANS is expected to make a top speed of 32½ knots. The approximate cost of constructing this vessel, without armament and equipment, is said to be \$11,000,000.

It is reported that welding has been used in her construction, particularly in the hull, to a greater extent than ever before attempted on a major vessels. Aluminum has been used for all furniture in order to save weight. Many fittings and some bulkheads are also said to have been made of this material. In place of the usual cork insulation, aluminum foil is used.

The NEW ORLEANS is the third ship on the navy list to bear that name. The first NEW ORLEANS was a ship of 2805 tons carrying 74 guns. She was started at Sacketts Harbor, N. Y. in 1814, but work was suspended Feb. 14, 1815 and after the proclamation of the treaty at Ghent, the work was entirely discontinued. In 1883 the still unfinished vessel was sold in accordance with an act of congress, 1882.

The second NEW ORLEANS was a cruiser of 3430 tons displacement, formerly named the AMAZONES. This vessel was built by Armstrong, Mitchell & Co., Newcastle-on-Tyne, England, and launched Dec. 4, 1896. She was purchased from the Brazilian government on March 16, 1898 in a frenzied effort to augment the small American navy for the war with Spain. Placed in commission March 18, 1898, she was placed out of commission Nov. 16, 1922, and sold in 1930.



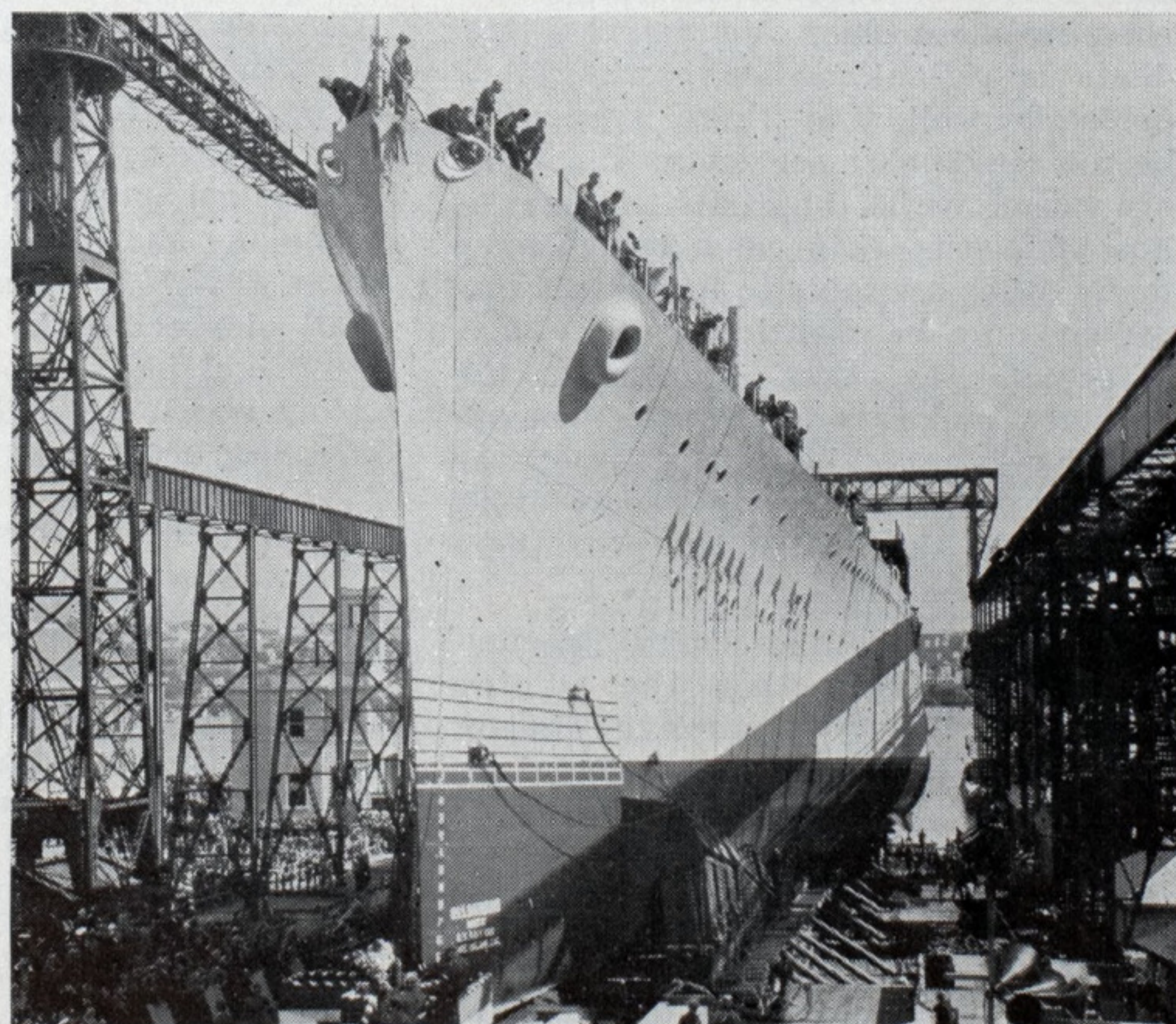
Treaty Cruiser U. S. S. New Orleans of 10,000 tons standard displacement. Launched at the Navy yard, Brooklyn, N. Y., April 12, 1933. Scheduled for completion early in 1934. Designed speed 32½ knots

Her length over all is 588 feet; beam, 61 feet, 9 inches; and normal draft, 21 feet, 7 inches. When completed, she will carry a main battery of nine 8-inch guns mounted in three 3-gun turrets. Her designed speed is 32.5 knots. The schedule of construction calls for completion Feb. 11, 1934.

At the time of launching, the SAN FRANCISCO was about 60 per cent completed and weighed 6635 tons. Hydraulic triggers were used for releasing the vessel in launching. Due to limited width of channel, chain drags were used for checking the speed. The chain drags consisted of three groups of chain piles on each side, which were picked up in succession and dragged down the floor of the slip, the first taking up after the vessel was entirely afloat.

Upon being released the ship started immediately, was afloat in 38 seconds and was stopped and ready for moving

Treaty Cruiser U. S. S. San Francisco of 10,000 tons standard displacement. Launched at the Navy yard, Mare Island, Calif., March 9, 1933. Scheduled for completion Feb. 11, 1934. Designed speed 32½ knots



European Shipping Makes Headway

Cruise Ships and Cargo Liners Active

By Frank C. Bowen

SINCE the last quarterly review some progress has been made in negotiations to recommence construction of the giant Cunard liner No. 534. The British government has announced its willingness to help to a certain extent—the exact extent has not yet been divulged—on the one condition that there is an end to the competition between the Cunard and the White Star for the luxury business on the Atlantic. The authorities maintain that a united front is absolutely necessary to meet foreign competition in this class of business.

The experience of the Italians with the Italian line, formed by the merging of the Navigazione Generale Italiana and Lloyd Sabaudo, immediately comes to mind, but in the case of the Cunard and White Star it is not easy to arrange details, in view of each company's financial results and connections with other concerns. But apparently the negotiations are making headway, and in the meanwhile there is a flat official contradiction of the rumor that the ship is straining badly on the slipway. She has been carefully surveyed and pronounced to be in perfect condition.

Good Cruising Business Expected

Naturally enough the request of the United States lines to take the LEVIATHAN off service as unprofitable is quoted, for there has always been a considerable school of thought in Britain against giant liners in any circumstances as merely a waste of money. This school is quoting the LEVIATHAN to support its views, but the argument does not impress students of Atlantic history who know perfectly well that there never has been a single ship service on the Western ocean which has paid, no matter how fine the ship may be. Among many other attempts to brave this precedent may be mentioned the GREAT WESTERN, the CITY OF ROME, the AMERICA and several others. The result has always been the same; the ship may be crowded on nearly every trip but at the end of the year there is a loss recorded.

All the passenger carrying companies anticipate that the coming summer will prove an even better season for cruise business than last.

This is a quarterly review of the shipping situation abroad, appearing regularly in MARINE REVIEW. The first article for this year appeared in the February issue. Similar articles will appear in August and November.

which came as a surprise even to the most optimistic. A large number of cruises have been planned, mainly by the companies which can put cabin and tourist third ships on to the berth for trips which are generally limited to 13 days in order to fit in with the fortnight's holiday of the average business man and woman. Several ships have been chartered by different organizations for use exclusively among their members.

Last year practically every ship with comfortable passenger accommodation had her full quota of yachting passengers, but this year it is realized that the competition is going to be keener, not only among British companies but also against the Continental lines. So the cruises have been made more elaborate and planned with a greater regard for expenses, and several ships have been more thoroughly converted for the purpose. The White Star HOMERIC, which with all her virtues has not fitted in very well with the OLYMPIC and the MAJESTIC, makes an ideal cruising yacht and has been treated in very much the same fashion as the allied Red Star line, BELGENLAND, which was also a lone ship on the Atlantic. This is an excellent way of treating a valuable ship that will not quite fit in with an established service. The liquidators of Lamport & Holt have made the same decision with the VANDYCK, which is to join her sister the VOLTAIRE after considerable alterations.

Apart from this yachting business there is little enough in the prospect for the Atlantic companies that is bright, for the regular passenger service this year is unlikely to be better than last, and on that the Cunard company showed a net loss of no less than £927,261. Happily this was after full depreciation, debenture interest etc., had been allowed, and the company was lucky in being able to transfer £930,000 from the reserve.

Increased Speed a Possibility

But the heavy loss of the company on the regular business again brings up the question as to whether it would not be worth its while to re-engine the post-war 20,000-ton ships of the SAMARIA class to give them better speed for the Atlantic run, although their present machinery makes them wonderfully economical for the cruising business on which they are popular.

With the ALBERT BALLIN class, which were originally similar to the Cunarders referred to, the Hamburg American line has proved that it is quite possible to increase sea speed from about 16½ to 19 knots. In this case, however, it must be remembered that this company wanted a big class of single screw cargo liners which would take the discarded turbines. The conversion was not found particularly economical on service although it has satisfied the passengers. It is now being considered whether these ships, having new engines, might not be given new ends. It is decided to undertake this work the next question will be whether they shall be given finer end lines like the American ships or the Maier hull form like the Dutchmen; the latter has not yet been attempted in ships of their size.

Cargo Liner Business Improves

The French official courts of inquiry into the mysterious fires on board the Messageries Maritimes liner GEORGES PHILLIPAR and the Compagnie Sud Atlantic liner L'ATLANTIQUE have reached their decisions, but there is very grave public dissatisfaction over their methods of publishing, or rather suppressing, the findings arrived at. The idea of making such careful investigation was to dissipate the exaggerated idea of fire danger in French liners, an exaggeration which is undoubtedly doing the industry great harm in its task of finding passengers. But this would soon have disappeared by the influence of commonsense, while now there is the uncomfortable feeling that things are being hushed up, and somebody is being protected, which is doing the unfortunate shipping companies infinitely more harm than the trouble originally guarded against.

On the cargo side there are still appreciable and unmistakable signs of a revival in berth business. Many cargo liners have been taken out of lay-up and recommissioned with tolerably successful results. Unfortunately the cargo movement is not yet steady, and the amount of shipments by regular service shows a wide variation, but taking the average there is an unmistakable increase which though slow is satisfactory all the same.

Unfortunately it is impossible to say anything quite as encouraging with regard to the tramp shipping situation, which is best described as being thoroughly "messy." The

Trend of Trade and Shipping in British Isles

	January	February	Two months ended Feb. 28,	
			1933	1932
Total entrances of cargo ships into British ports:				
Number of vessels	3,310	3,075	6,385	8,093
Tons	4,399,795	4,034,483	8,434,478	9,288,106
Tonnage from Atlantic coast of North America.....	732,107 (16.7%)	625,466 (15.5%)	1,357,573 (16%)	1,416,747 (15.3%)
Total clearances from British ports:				
Number of vessels	3,980	3,667	7,647	8,283
Tons	4,399,790	4,088,884	8,484,478	8,897,258
Tonnage going to Atlantic coast of North America.....	644,744 (14.7%)	582,298 (14.3%)	1,227,042 (14.5%)	1,159,951 (13%)
Total value of goods:				
Exported	£33,394,540	£32,410,396	£65,769,925	£71,826,018
Imported	£54,123,867	£49,077,444	£102,971,459	£132,325,496
Exports of coal:				
Tons	3,217,275	2,925,021	6,142,296	6,546,032
Value	£2,611,494	£2,324,069	£4,935,563	£5,181,361
Tonnage shipped for use of steamers	1,118,394	1,092,242	2,210,636	2,480,660

rates still show a tendency to drop lower and lower, and as shipowners were obviously losing money last year, and have not contrived to reduce expenses very much since, the acceptance of such business is bound to show a deplorable result on the balance sheets when they begin to come out. The subsidized tramp shipping under the Italian flag is naturally doing the best, for it is able to accept these ridiculous rates and still show a balance, while even the flags which have the cheapest running expenses are showing violent fluctuation in their laying up figures from month to month, almost week to week. But it is reckoned that the tramp business must follow the liner business soon, although some companies may be squeezed out of existence before the improvement occurs.

The up to date tramp steamers ordered of Messrs. J. & C. Harrison are still being delivered and more have been ordered, and it must be admitted that those which have been commissioned have had little difficulty in finding work. Their rates have not been good, but with their remarkable economy they have a better chance of showing a return than competing ships only a few years old. Their economy has been gained by improvements both in the hull and machinery, and there is great discussion as to whether it is really worth the first cost with its accompanying overhead expenses.

Many people believe that the simplest and cheapest engines will pay better in the long run, although there is no doubt that a hull improvement for tramp steamers was long overdue and in most ships now on the bulk market a lot of the running expenses are accounted for by unnecessary resistance.

Sir Joseph Isherwood, whose name will always be associated with longitudinal framing for ships, has put on the market an entirely novel hull in which the midship section has been carefully designed to minimize resistance as well as the ends. It is called the arc-form and the inventor ordered several tramp ships to this design on speculation, finding no difficulty in interesting owners. In the tank experiments they showed exceptional economy but they have yet to be proved on service and the question of overhead expenses again arises.

Powdered Coal for Diesels

In the meantime another effort to cut down running expenses, this time with the diesel engine, has been made by working on Dr. Rudolf Diesel's original dream of running his engine on finely powdered coal. In his day it was impossible to powder the coal nearly finely enough to avoid abrasion, but Continental engineers have made such progress with their experiments that one firm is reported to be ready to supply diesel engines running on powdered fuel

and to guarantee that the coal consumption shall not exceed 0.8 pound per brake horsepower hour. This is not nearly as good a result as has been obtained with oil fuel, but considering the comparative price of coal and oil it means a big cash saving and the progress of these experiments is being watched carefully.

Another point on which the shipowner finds some relief from his trouble is the steady improvement in the market for old ships to be broken up. Within the last few months the price given by the scrapers has been trebled and needless to say shipowners have jumped at the opportunity. It is true that the question has been raised by some of the biggest men in the shipbreaking market as to whether this price is justified, and whether it is not a purely speculative level which cannot yield a profit, but in the meantime the Cleveland district reports a continued shortage of scrap metal and on this hopes are based of a further hardening in price.

Unfortunately the British shipbreakers have not yet contrived to adjust their affairs under the new customers tariff and the case of the former Royal Mail Steam Packet Co. GLAMORGANSHIRE is an example of the ridiculous conditions now ruling. She was one of the standard steamers that was ordered in Japan during the war shortage and was "wished on"

(Continued on Page 36)

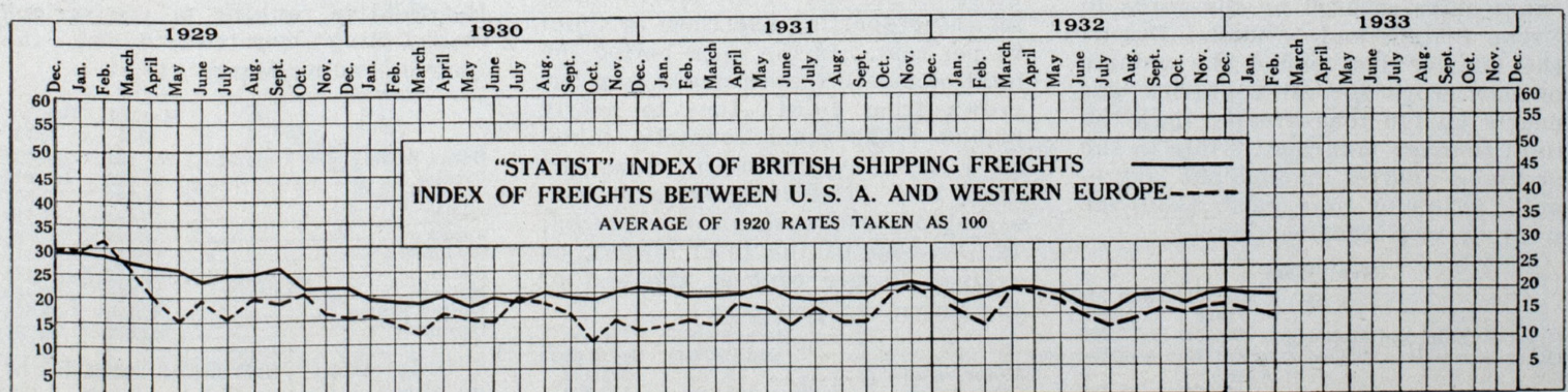


Diagram showing fluctuations of ocean freight rates for four years and two months

Orders Exceed Launchings in World Shipbuilding

OF THE ten leading shipbuilding countries of the world only Denmark is now producing a smaller tonnage of merchant vessels than the United States, according to a recent statement issued by Lloyd's Register of Shipping, covering returns for the quarter ended March 31 last.

Less than three-quarters of a million gross tons of merchant ships are now being built throughout the world, the lowest figure in more than fifty years past which is, however, a decline of only 24,000 tons during the last quarter, as compared with a decrease of 135,000 tons in the quarter ending Dec. 31 last.

Some improvement is reported in the volume of shipbuilding under way in Great Britain and Ireland, and in Sweden. Italy, Spain and Denmark are building about as much as they were at the beginning of this year; but declines are shown for France, Japan, Germany and Holland, as well as for the United States.

The comparison during the last two quarters in the volume of shipbuilding is shown in the following table of gross tonnage:

	Mar. 31, 1933	Dec. 31, 1932
Great Britain and Ireland.....	252,401	225,497
United States	31,128	59,628
Other countries	457,415	480,595
World total	740,944	765,720

At the beginning of this year, Great Britain and Ireland were building 29.4 per cent of the total world output. Their present proportion is 34.1 per cent. In the same period the United States' share of the aggregate tonnage for all countries has fallen from 7.8 per cent to 4.2 per cent.

Some improvement in shipbuilding conditions is indicated by the fact that during the last quarter, for the first time in a long period, the volume of new orders on which work was begun was greater than the total of tonnage launched. This was chiefly due, however, to orders for more than 75,000 gross tons of merchant ships secured by the yards in Great Britain and Ireland. During the quarter just ended the volume of new work for all countries was nearly 50,000 tons greater than the total tonnage launched; while in the previous quarter, launchings aggregated 130,000 tons more than the total of new construction.

New Work		
	Mar. 31, 1933	Dec. 31, 1932
Great Britain and Ireland.....	76,001	7,290
Other countries	63,793	75,196
World total	139,794	82,486
Launchings		
Great Britain and Ireland.....	12,732	38,979

Other countries	78,567	173,838
World total	91,299	212,817

A decrease in the construction of steam and motor tankers of 1000 gross tons and upwards, each, was shown during the quarter just ended. Great Britain and Ireland, Italy and Sweden still have the same volume of this type of shipping under way as at the beginning of the year; but Germany's total has been cut in half, and that of the smaller countries showed some decline. Com-types of vessels.

	Mar. 31, 1933	Dec. 31, 1932
Sweden	54,000	54,000
Italy	34,152	34,152
Great Britain and Ireland.....	30,026	30,026
Germany	24,800	49,600
Other countries	26,712	26,712

World total	169,690	194,490
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Motor tankers again represented the great bulk of the tonnage during the last quarter, 152,930 tons of the total being of vessels to be equipped with internal combustion engines.

More motor vessels continue to be built than all other types of merchant ships combined. At the beginning of this year the total tonnage of motorized ships building was only 19,000 gross tons greater than for all other types, but at the end of the March quarter this lead had been increased to nearly 80,000 tons. As compared with a gain of 17,000 tons in motorship construction during the quarter, there was a decline of 42,000 tons for other types of vessels.

	Mar. 31, 1933	Dec. 31, 1932
Motor vessels	410,153	392,749
Other types	330,791	372,971

World total	740,944	765,720
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While motor vessels are still secondary in the shipbuilding program of Great Britain and Ireland, they now represent a considerably greater proportion of the construction under way in those countries than they did at the beginning of this year. Only nine per cent of the work in hand at the beginning of this year was motorized tonnage; while at the end of the March quarter the proportion had risen to about 24 per cent. In the same period the total of motor vessels under way has grown from 20,611 tons to nearly 60,000. The other countries taken as a group, continue to base the great bulk of their building on motor ships, and these now represent 72 per cent of the total output, as against 70 per cent at the end of the December quarter.

	Great Britain and Ireland	Other Countries
Motor vessels	58,981	351,172
Other types	193,420	137,371
Total	252,401	488,543

Germany no longer holds the lead in output of motor vessels. Sweden, Italy, Great Britain and Ireland, and Japan, in the order named, are now constructing a greater volume of this type of tonnage. In comparison with Germany's decline of 27,000 gross tons in motorship building during the last quarter, Great Britain and Ireland showed gains of 38,000 tons, and Sweden of 23,000 tons. How motor ship construction has varied in the last two quarters is shown in the following table:

	Mar. 31, 1933	Dec. 31, 1932
Sweden	80,969	57,160
Italy	59,098	57,598
Great Britain and Ireland.....	58,981	20,611
Japan	52,860	60,745
Germany	49,995	77,740
Holland	32,250	39,250
Spain	31,252	31,252
United States	503	503

Returns covering all types of marine engines being built or installed throughout the world show gains during the quarter just ended in the power of oil engines and reciprocating steam engines, and a decrease for steam turbines.

For oil engines, the aggregate indicated horsepower at the end of the March quarter was 381,059, as against 358,111 at the end of the December quarter. For Great Britain and Ireland the total rose from 14,745 to 35,225 in this period; while for the United States there was a decrease from 8806 to 5726. Germany's figure dropped from 58,630 to 39,860, and Japan's from 45,360 to 38,830. Holland's total, however, advanced from 61,049 to 80,434; Italy's from 39,700 to 40,885. and Sweden's from 47,541 to 48,400.

In steam reciprocating engines the total indicated horsepower for all countries rose during the quarter just ended from 87,296 to 90,433. Great Britain and Ireland showed a gain from 56,601 to 60,008.

For steam turbines there was a decline during the quarter, from 479,440 to 412,745. For Great Britain and Ireland the decrease was from 221,900 to 188,200, and for the United States from 64,500 to 30,000. France reported no change from the 186,000 shaft horsepower total of the beginning of this year.

There were numerous shifts in the relative ranking of the various shipbuilding countries during the quarter ending March 31.

	Mar. 31, 1933	Dec. 31, 1932
Great Britain and Ireland.....	252,401	225,497
France	97,489	101,675
Sweden	82,332	58,530
Italy	59,098	59,113
Japan	55,570	63,345
Germany	52,565	80,310
Spain	33,612	33,412
Holland	32,450	39,450
United States	31,128	59,628
Denmark	20,187	20,785

Only three merchant vessels of 20,000 gross tons or upwards are now building throughout the world.

How the Modern Freight Steamer Can Operate on Lower Fuel Costs

By John T. Batey and J. Leslie Batey*

IN A paper read before the Institution last year, entitled *Fuel for Merchant Ships*, it was mentioned by a shipowner who took part in the discussion that the author of that paper had approached the subject from the "liner" point of view, whereas he, the owner, stated he was a "tramp" owner.

The present paper is intended to deal with the problem which now confronts the "tramp" owner who has money to invest, and has the conviction that even though there may be about 1,970,000 tons of shipping laid up in British ports it is only a matter of time before shipowning becomes again a prosperous business.

One of the most remarkable developments which has taken place in shipbuilding in recent years has been the reduction in fuel consumption achieved by some of the latest cargo vessels, which enables them to operate, even at the present time, without loss.

Cargo Hull Form Investigated

For some years past considerable attention has been devoted to the production of passenger and cargo vessels which could be driven at high speeds from 12 to 20 knots or over, with the minimum amount of horsepower and the minimum cost of running.

At the same time it is known that some shipbuilders have been investigating the question of producing a

Paper entitled, "*Consideration of the Improved Forms of Modern Cargo Steamers and the Effect on Their Operating Cost Due to Their Low Fuel Consumption*," presented by John T. Batey, member of council, and J. Leslie Batey, associate member, at the seventy-fourth session of the Institution of Naval Architects, April 5, 1933. Reprinted in full, except for omission of two diagrams of curves and brief reference to one of the curves.

Modern Tramp Steamer

Dead weight 9000 Tons

Length overall, feet, inches.....	440 6
Beam extreme, feet, inches.....	56 2 1/2
Load draft, feet, inches.....	24 9 1/2
Load displacement, tons.....	12,635
Block coefficient.....	0.749
Speed, design load (max.) knots.....	10 1/2
Gross tonnage.....	5,484
Net tonnage.....	3,220
Propelling machinery.....	Triple Expansion Engine
Cylinder diameters, inches.....	23 1/2 40 68
Stroke, inches.....	48
Boilers, single ended Scotch.....	2
Diameter, feet, inches.....	15 6
Length, feet, inches.....	11 6
Pressure, pounds per sq. in.....	220
Draft	Forced
Superheat, degrees Fahr.....	225
Heating surface, sq. ft.....	5,020
Auxiliary Boiler, Scotch.....	1
Diameter, feet, inches.....	13 6
Length, feet, inches.....	11 6
Pressure, pounds per sq. in.....	220
Draft	Forced
Steam	Saturated

hull form for an ordinary tramp steamer that can be driven from 9 to 12 knots with the minimum horsepower and consequent economy in operating.

Engine builders have also contributed their part, and have produced machinery capable of developing power at a reduced rate of fuel consumption per horsepower.

The shipbuilder's contribution to the general improvement in efficiency has mainly been devoted towards the production of an easy form of hull to drive, and in these investigations the forebody lines, midship section and after-body lines and appendages have received individual and collective consideration.

If it were possible for the shipbuilder to have a free hand with the length, breadth and draft, he would often be able to produce ships of more efficient forms. As it is, restrictions are imposed on all these

dimensions by the lengths of berths available, widths of entrances to wet and dry docks and depths of water in docks, harbors and rivers in which the vessels trade. With these restrictions on length, breadth and draft a vessel of box-shape form would lift the maximum cargo, but, of course, such a shape is impracticable.

For many years it was the custom for shipbuilders to take the form of a similar ship, that had given favorable results in service, as a basis upon which to design a new vessel. The lines for the proposed vessel were drawn out proportional to the known vessel, and then modified to suit the new dimensions and displacement required for the new vessel.

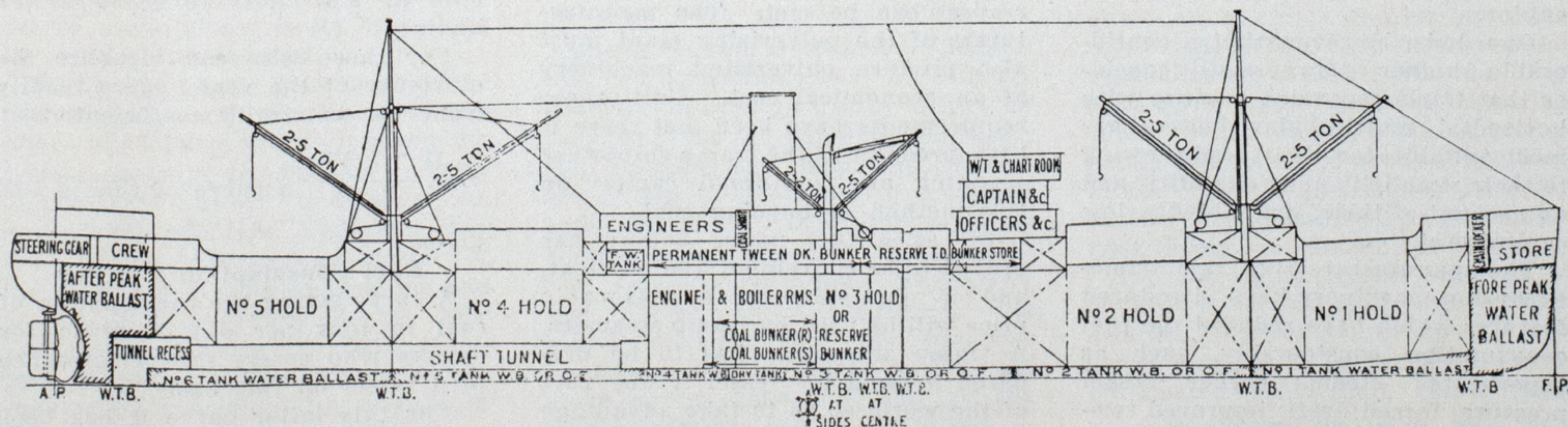
Improvement On Old Methods

A wooden model was made, leaving the ends and bilge rather full. The final fairing up was then done by eye, and it depended solely on the intuition and experience of the man with that eye whether a shipbuilding firm turned out a series of efficient or inefficient vessels. Many members present will remember this procedure, and some may still use this method.

A popular form of hull among shipbuilders and shipowners was what was known as a "cod's head and mackerel tail," but it was not always recognized that the best proportion of the head to the tail varied with the speed and the size of the ship.

Some firms were making use of model experiments before the war, but it only really since the war—in fact, since the end of the post-war boom period—that shipowners and shipbuilders have fully appreciated the great value of tank experiments in designing hull forms of the ordinary cargo or "tramp" vessels.

Thanks to the work carried out at the National Physical laboratory and



A Typical 9000 Tons Deadweight Modern Cargo Tramp Steamer

the results obtained, it is now possible for a firm maintaining a sufficiently efficient staff to design a form for a "tramp" vessel without recourse to model experiments. Such a form may attain to within 5 to 6 per cent of the most efficient form possible.

Model Experiments Used

It is advisable, however, to run a model experiment if it is desired to take full advantage of the very latest investigations regarding hull forms. It is also desirable that experiments should be run to test the size and shape of propellers most suitable for the speed and power to be developed, and to see that the after-body lines are designed to give a good flow of water to the propeller.

A "streamline," or so-called "cruiser" stern, if properly designed, will assist the even flow of water in way of the propeller, and the additional cost is not excessive in view of the advantages obtained.

Considerable attention has been given to the design of rudders, for which certain economies are claimed, and I am assured by shipowners who have fitted these rudders to existing ships that these economies have been obtained, as shown in comparing the performances of their vessels on similar voyages and conditions, when fitted with the ordinary rudder, and after a streamline rudder had been adopted.

Various devices have been fitted to the stern-frames to obtain an uninterrupted flow of water to and from the propeller, which have given favorable results in some cases, but have been discarded in other cases. This would appear to be a field in which further investigations might be carried out with advantage.

The foregoing gives an outline of the methods which have been used to develop the forms for modern cargo vessels which, in conjunction with more economical main propelling machinery, have resulted in substantial reduction in fuel consumption.

Choice of Propelling Machinery

In his choice of main propelling machinery a tramp shipowner may select triple-expansion engines, quadruple-expansion engines, geared turbines, a combination of reciprocating engines and exhaust turbine, or diesel engines.

One finds, however, that a considerable number of owners still consider that triple-expansion engines with horizontal multitubular boilers are most suitable for their trade, owing to their simplicity and reliability, and on account of their, undoubtedly, low capital cost.

The manufacturers of this triple-expansion machinery have introduced features which have reduced the fuel consumption considerably, such as superheated steam, higher steam pressure, forced draft, improved two-stage feed-heaters, poppet valves,

more efficient auxiliaries, etc. The economy in fuel consumption has been most marked, and in conjunction with the improved form of hull has justified the small increased capital cost incurred.

It is questionable, however, whether further improvements can be made to make them as economical in operation as some of the other types of steam engines working at still higher pressures with efficient auxiliaries, and possibly fitted with water-tube boilers.

It is therefore the problem before the manufacturers of the types of machinery other than the triple-expansion machinery mentioned above to satisfy the tramp owner that the economies effected by the adoption of their machinery will so reduce the expenses of operation that, in spite of the additional capital cost involved, the ship will be able to compete in the world's markets successfully, even at the present low rates of freights.

It is necessary, however, that the engine builders should not be tempted to exaggerate their claims. Cases have arisen where claims of economy have not been substantiated, and this has resulted in an unsettling effect upon the mind of the shipowner, and has, in fact, caused orders for new vessels to be held up indefinitely.

What Fuel to Use

The great majority of shipowners who own tramp steamships regard coal as most convenient for their purpose, and as coal is one of our greatest national assets it is desirable that every effort should be made to obtain the maximum return for every ton of coal used. A great advance has been made in this direction in recent times, but there is still room for further improvements to be made in boiler efficiency.

Coal in a pulverized form has been used, and it still being used successfully in certain steamers. Tramp shipowners, however, will not consider seriously the adoption of pulverized coal until the colliery owners have taken steps to ensure a guaranteed supply of coal suitable for this method, whenever and wherever it may be required. The colliery owner must therefore make such arrangements as to ensure that the requirements of tramp shipowners in this respect can be met. The manufacturers of the pulverizing plant must also produce pulverizing machinery at an economical cost. Until these requirements have been met there is little prospect of the tramp shipowner spending any additional capital on this method of burning coal.

Oil as a fuel under boilers has proved to be convenient and efficient, and if obtainable as a reasonable price will be used by tramp steamers. A tramp shipowner has to be prepared to send his vessel to any part of the world so as to take advantage of any freight which may be offered.

Coal can be purchased in certain parts of the world at a comparatively low price. Fuel oil can be purchased at other parts also at a comparatively low price. It would appear, therefore, that it is advisable for a tramp steamer to be fitted up to burn either fuel according to the part of the world in which the vessel is trading and the prices prevailing.

This arrangement can be adopted at a reasonably low cost, and the ship which is equipped to burn either coal or oil will very soon repay the shipowner for the small increased outlay of capital.

Cargo Arrangements and Gear

Two derricks per hatch, of three or five tons lifting capacity, with suitable winches still seem to be the most popular equipment for a vessel discharging its own cargo, and there does not seem to be much room for improvement here.

With regard to hatches, however, it is necessary to study the regulations agreed between the shipowners and trimmers most carefully, as the rules are so framed that minor details of arrangement may cause trimming rates to be levied out of all proportion to the detail involved.

The usual care must, of course, be taken to comply with the tonnage regulation so that no unnecessary spaces are included in the tonnage.

In spite of all the advantages to be obtained by operating with a modern tramp, shipowners, with one or two outstanding exceptions, have not taken advantage of the position of the shipbuilding industry to replace their obsolete tonnage with modern tonnage at the low prices now prevailing.

This may be due to many causes, but if it is due to lack of faith in the shipbuilders' ability to produce efficient ships, curves are given of the estimated performance of a modern 9000 tons deadweight tramp steamer. (Given in the paper as presented but omitted in this text: Ed.'s note)

As an indication of the efficiency of the propeller and machinery, a curve of propulsive efficiency has been drawn. This curve of propulsive efficiency is overall, namely, the effective horsepower derived from the naked model divided by the steam indicated horsepower. (Varies from 0.56 at 8.5 knots to 0.595 at 11 knots)

For those who can visualize the efficiency of the vessel more readily from the Admiralty coefficient, that

is, $\frac{D^{2/3} V^3}{I. H. P.}$, a curve of this is also given.

Fuel Consumption Per Day

A curve giving the consumption of coal in tons per day is given for owners who assess the performance of a vessel on this basis.

For this latter curve it has been
(Continued on Page 38)

Conte di Savoia Stabilizers Used in Heavy Seas

Time and weather have now permitted a careful study of the effect of the gyro stabilizers on the new Italian liner, CONTE DI SAVOIA. By actual test it was found that with the stabilizers shut off the ship rolled from 7 to 30 degrees. With the stabilizers in operation this roll was reduced to a range of 2 to 4 degrees representing 86 per cent stabilization.

On arriving in New York April 6, Antonio Lena, commander of the CONTE DI SAVOIA, said that the crossing just completed, "Was our baptism of gales and the worst weather this liner has encountered. She stands it well."

Arriving on the liner were Preston Bassett, chief engineer of the Sperry Gyroscope Co., and F. Percy Hodgkinson, engineer in charge of the stabilizing department, of the same company. During the voyage a study had been made of the length of waves from crest to crest and the height and depth and the effects of the waves hitting the ship from different angles.

Capt. E. E. O'Donnell Dies Head of Eastern Lines

American shipping has suffered a severe loss in the death of Capt. Eugene E. O'Donnell, president of the Eastern Steamship Lines Inc., at Boston on April 11. He was only 50 years of age and his death was due to peritonitis after an operation for appendicitis.

Captain O'Donnell was born in the old North end district of Boston in 1883. His father was engaged in the fish business and he grew up in intimate association with the life at the docks and of the sea. It was intended by his father that he should pursue his studies, but at the age of 16 he shipped as a deck hand on a tug and soon became mate. From then on he was set for a career on the sea, first serving as a seaman on the steamship PARTHIAN of the Boston & Philadelphia line. Within 27 months he had worked his way up to chief officer. He then joined the Standard Oil Co. as an officer in its fleet along the north Atlantic coast.

At the age of 25, he was an experienced ship's officer. In 1908 he joined the Metropolitan line and advanced rapidly to become master of the H. F. DIMOCK, a freighter operating between New York and Boston. He later served as master of the passenger steamship HARVARD and of the MASSACHUSETTS, in the New York-Boston service. In 1912 President Wilson appointed him supervising inspector of the fifth district of the steamboat inspection service.

He was active in all matters pertaining to maritime interests and particularly those of Boston and New England. Leaving the inspection service in 1918, he joined C. H. Sprague & Son Inc. in charge of the marine department. It was in this connection that he demonstrated his initiative and capacity as manager of steamships, developing a successful service to Mediterranean ports. He also organized the American Republics line between the East coast of South America and United States ports.

On the resignation of Calvin Austin as president of the Eastern Steamship Lines Inc., one of the largest coastwise lines in the world, Captain O'Donnell was elected as his successor. This was in 1928 and during the intervening period under his management this line has continued to give the highest order of service. Two



new passenger ships, the SAINT JOHN and the ACADIA, contracted for in 1931 with the Newport News Shipbuilding & Dry Dock Co., were added to the service in the summer of 1932. These vessels are palatial, fast passenger and express freight ships, operating between the ports of Boston and New York and Nova Scotia.

One of Captain O'Donnell's outstanding characteristics was his understanding of and sympathy with the rank and file of shipping employees, and the American Steamship Owner's association in a number of instances appointed him as arbitrator in differences between employees and employers. His shipping interests were many and varied. His experience, his sound judgment and his practical knowledge will be sorely missed, not alone by his colleagues, but by the entire American shipping industry.

Shipbuilders Hold Annual Meeting in New York

At the annual meeting of the National Council of American shipbuilders held at the Whitehall club, New York city, April 20, 1933, H. G. Smith, president, in making his report to the members stated that:

On Jan. 1, 1933 there were under construction in private shipyards of the United States *four* seagoing, steel, steam and motor vessels, each of 1000 gross tons or over, aggregating 53,652 gross tons, as compared with *twenty-three* vessels of 236,100 gross tons building on Jan. 1, 1932 and at the present time there is only *one* seagoing merchant vessel under construction, the WASHINGTON of 24,000 gross tons, and this vessel is to be delivered this month.

There were also under construction on Jan. 1, 1933 *seven* government vessels of 47,900 displacement tons, as compared with *eight* vessels of 49,900 displacement tons building on Jan. 1, 1932.

The shipbuilding industry is estimated to have been operating at about 35 per cent capacity during 1932.

During 1932 no contracts were placed for seagoing merchant vessels. A contract for the construction of *one* scout cruiser with a displacement tonnage of 10,000 tons, was awarded.

There were delivered during 1932 *thirteen* combination passenger and cargo vessels, *two* ocean-going freight-car carriers and *one* oil tanker for private owners and *one* scout cruiser and a coast guard cutter for the government.

The labor employment on new ship construction on Jan. 1, 1933 for both private and government ownership was approximately 11,500 which is a decrease of about 33 per cent from that of a year ago. It has been much further reduced since the first of the year.

With the delivery of the WASHINGTON at the end of this month all of the contracts for new construction placed under the provisions of the merchant marine act of 1928 will have been completed. This program consisted of 42 merchant vessels at an approximate total of 460,000 gross tons. These vessels are all of the most modern type and equal in efficiency to the best produced anywhere in the world at the same time. Their total cost has been approximately \$160,000,000 and they have given employment over a period of four years, during a period of economic depression, to about 13,000 men in the shipyards and to about an equal number well distributed to our industries throughout the United States.

The remaining vessels required to be built under the mail pay contracts awarded under the provisions of the act of 1928 are 30 in number but it is anticipated that their construction

(Continued on Page 30)

Y.T.119, Diesel Electric Tug, All-welded Construction

IN BUILDING the large, powerful diesel electric tug YT-119 the United States navy has materially contributed to progress in ship construction and marine engineering. Her performance in service will demonstrate in a practical way the correctness of the methods used in construction, and the reliability and efficiency of her machinery.

The YT-119 is a steel tug, electric welded throughout, constructed on the longitudinal system. Four watertight bulkheads divide the hull into five watertight compartments. The new vessel will be used for towing and general harbor work at Pearl Harbor, Hawaii.

Design of the YT-119 originated in the bureau of construction and repair of the navy department. Construction took place at the navy yard, Boston, in one of the dry docks, and the vessel was launched by floating in dry dock Dec. 19, 1932. She was commissioned March 7, 1933.

The length overall is 110 feet, 3 inches; length between perpendiculars 98 feet; breadth molded, 24 feet; depth molded, 13 feet, 6 inches. Draft at full load, mean, is

8 feet, 7½ inches, and the corresponding displacement is 300 tons. Diesel fuel oil capacity in bunkers is 31 tons. The speed of the vessel on trial was 12.6 knots.

The Propelling Machinery

The propelling machinery is diesel electric drive. The generating plant, consisting of two McIntosh & Seymour diesel engines, each direct connected to a General Electric generator, is located slightly forward of amidships. The propelling motor is located aft. The diesel engines are of solid injection four cycle, non-reversible type having six cylinders of 12½ inch bore and with a stroke of 20 inches. Each engine develops 417 shaft horsepower at 300 revolutions per minute. The main generators, each connected to one of the diesel engines, are each of 260 kilowatts, at 250 volts 300 revolutions per minute and 1040 amperes, direct current. On an extension of each generator shaft there is one exciter of 35 kilowatts at 125 volts and 200 amperes. The current generated furnishes power for one double armature 500 volts, 1040 amperes, 640 horsepower at 125 revolutions per

minute electric motor, connected to the propeller shaft through a Kingsbury thrust bearing. All of the above electrical equipment was supplied by the General Electric Co.

For auxiliary purposes there is one combined generator and air compressor driven by a three cylinder, 24 horsepower, Cummins diesel engine. The generator, of 10 kilowatts, was supplied by the Electro Dynamic Co., and the compressor by the Ingersoll-Rand Co. One hand air compressor of Ingersoll-Rand make is also installed.

Pumps And Auxiliaries

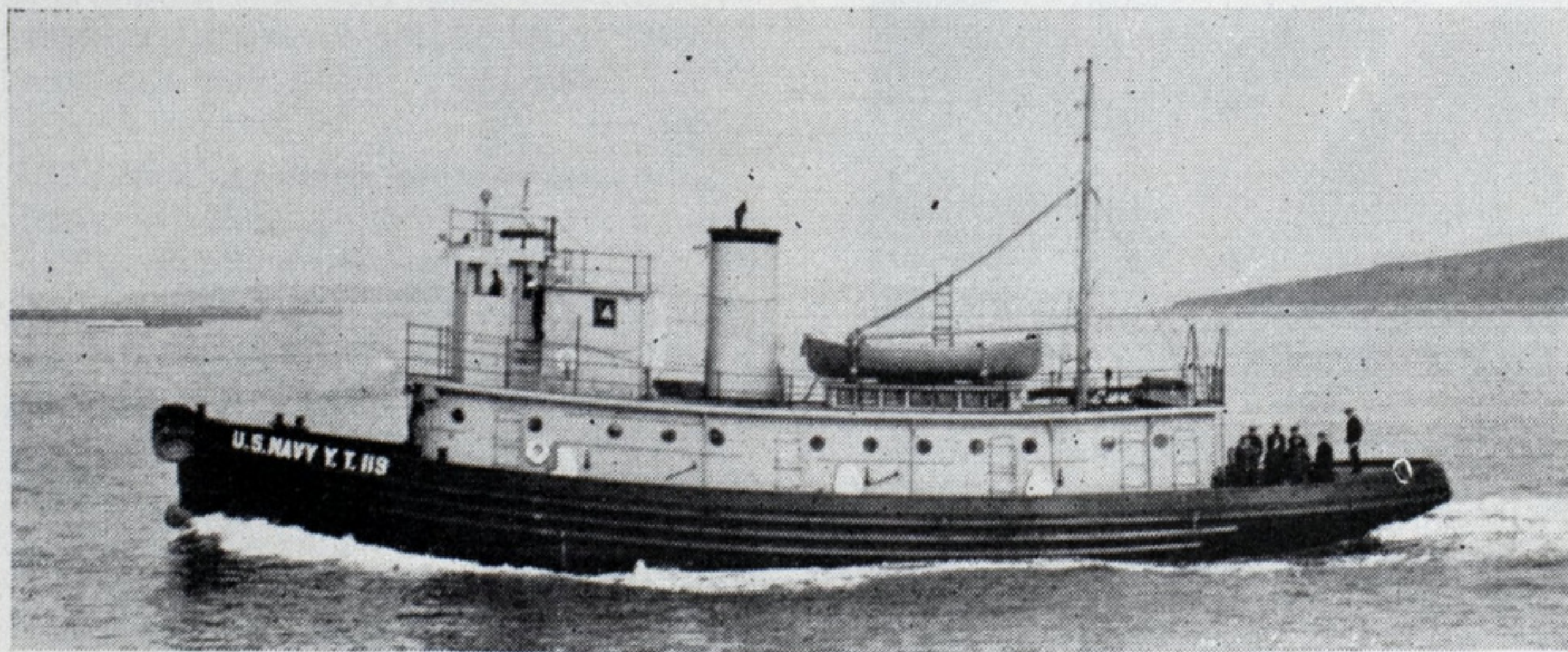
The pumping equipment is quite elaborate, including one 75 horsepower fire pump, one 2 horsepower sanitary pump, one 5 horsepower lubricating oil standby pump, all supplied by the Worthington Pump & Machinery Co. Additional pumps are one 2 horsepower bilge pump of La Bour Co. make; one fuel oil transfer pump of ½ horsepower and one 10 gallon per minute diesel fuel oil pump by Northern Pump Co., and one fresh water pump of ¼ horsepower by Fairbanks, Morse & Co.

Other auxiliaries include electric driven steering gear, of Lidgerwood Mfg. Co. make, anchor windlass by Hyde Windlass Co., electric motors by Diehl Mfg. Co. and lubricating oil purifier of Hydroil type by Goulds Pumps Inc.

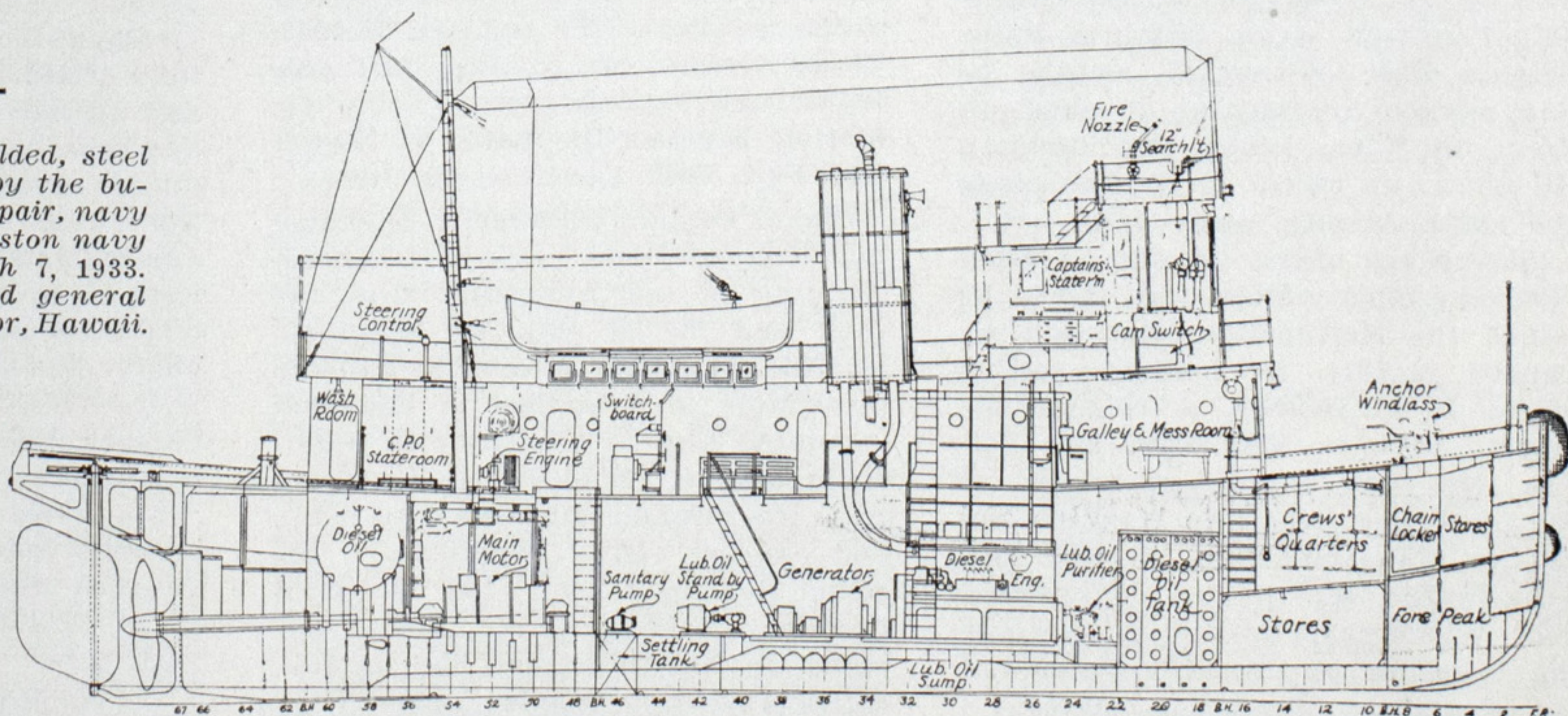
The propeller was made at the Philadelphia navy yard. The boiler for heating purposes is of American Radiator Co. make and is fitted with a burner made by the Automatic Burner Corp. Refrigeration is supplied by General Electric household refrigerator. The galley is electrically equipped by the Edison General Electric Appliance Co.

For handling stores and other equipment, there is one 20-foot boom of 2000 pounds capacity.

The propelling motor is controlled from the pilot house. On the deck above the pilot house there is a fire nozzle so that the vessel can be used for extinguishing fires on other craft or along the shore. There is also a 12-inch searchlight.



DIESEL electric, all welded, steel tug YT-119 designed by the bureau of construction and repair, navy department, built at the Boston navy yard. Commissioned March 7, 1933. To be used for towing and general harbor work at Pearl Harbor, Hawaii. Speed, 12.6 knots



Need an Efficient Merchant Marine for Development of Foreign Trade

By Admiral Hutch I. Cone*

COMPOSED of traffic and foreign trade specialists, the National Foreign Trade council realizes—as everyone realizes who has given the matter serious thought—that our foreign commerce can be developed and handled in the most satisfactory manner only if the country possesses an efficient merchant marine.

You gentlemen are aware that the renaissance of the American merchant marine dates from the Great war, when, as part of our contribution to the cause of the allies, we undertook the enormous task of building ships in sufficient number not only to transport and maintain in army of millions of men overseas, but to replace the mounting marine losses of Great Britain, France, and Italy. You are also aware that the United States shipping board, in the post-war period, used the more serviceable units of this great fleet to re-establish the American flag on the world's trade-routes, and that after varying vicissitudes most of the services so established were disposed of to private American purchasers.

Help to Equalize Costs

Today, with 85 per cent of the vessels composing the American merchant marine in private hands, it might be thought that we have solved about all the major problems that faced the nation in 1916, when it resolved to acquire a strong commercial fleet of its own.

But it is one thing for the government to establish a great industry, and quite another to perpetuate and safeguard it after it has been transferred to private ownership. Particularly is this true of that part of the merchant marine which operates in foreign trade. Here the American shipowner encounters a most ruthless and devastating form of competition. It is a field in which successful operation depends not so much on enterprise and skill—for all seafarers are enterprising and skillful—as on the comparative cost of equipment, labor, and supplies.

The foreigner's cheaper ships and lower operating costs impose on the

American shipowner who engages in foreign trade a competitive handicap that would absolutely prohibit our citizens from risking their capital in ventures of this sort, were it not for the fact that congress has wisely provided certain aids designed to lower the building and operating differentials and thus make American competition possible. Without these aids our ships would either be driven from the seas, or returned to the government for operation at a cost to the taxpayer far in excess of the present subsidies.

The principal problem facing American ocean shipping today is to secure the continuance of those aids. No other problem is half so vital. Ever since the subventions were determined upon, as essential to the carrying out of our merchant marine policy, they have been subjected to continuous attacks, both at home and abroad.

Foreign opposition to our present policy of government aids—aids granted in the form of construction loans and contracts for the carriage of ocean mails—is easy to understand. In the pre-war days foreigners held a strangle-hold on our ocean carrying trade, dictated freight and passenger rates, and for transporting American exports and imports enjoyed a revenue of hundreds of millions of dollars annually.

During the post-war period we have succeeded in developing our merchant marine to a point where its participation in the ocean carriage of American freight and passengers has made serious inroads in the near-monopoly previously enjoyed by the foreign maritime nations. Alarmed at the trend of events, which has been rendered more acute by the slump in international trade, foreign shipowners demand something be done about it.

Suggest We Retire from Seas

They profess to believe that we do not know how to operate ships; that we cannot train a sea personnel competent to hold its own with experienced foreign seamen; that our subsidies, far from being designed to make American competition possible, were deliberately intended to stifle competition; that, with world shipping already overtonnaged, we have recklessly gone ahead with an ambitious construction program;

that, in short, since we lack the seamanship of our forefathers of the clipper ship era, and can only operate our ships with government assistance, we would do well to scrap our merchant fleet and abandon without further ado the whimsical notion of becoming a first-class maritime power.

Arguments such as these carry no weight with persons who have even a superficial knowledge of the facts. The present ills of shipping are not even remotely due to marine developments in the United States. They have been brought about partly by the unprecedented decline in international trade, partly by the construction of unneeded tonnage by our competitors, and partly by the failure of other maritime nations to emulate the example set by the United States in scrapping obsolescent ships.

Responsible for Excess Tonnage

The records show that during the past ten years Great Britain, France, Italy, Japan, Germany, and the United States have built 2100 ocean-going ships, each of 2000 gross tons or over, totalling 14,000,000 gross tons. To this formidable number our own modest contribution has been less than 100 ships, of about 850,000 gross tons. Great Britain heads the list, with nearly 1400 ships of 8,500,000 tons, outranking as in number of ships by 14 to 1 and in tonnage by 10 to 1.

In the same period the United States has led the world in breaking up cargo ships of semi-obsolete types, while the total American-flag tonnage removed from registry during the past six months alone surpasses the scrapping activities of all other nations combined.

The real shipping surplus exists in those countries which have built up their commercial fleets to a point in excess of their own requirements.

The fact that our foreign competitors view the renaissance of the American merchant marine with so much solicitude is at once a tribute and a warning. It is a tribute to the giant strides we have made since the war. It is a warning that we must be alert to defend the strategic position we have already attained on the trade routes of the world. Our competitors will enter the forthcoming

(Continued on Page 36)

Abstract of address on *Problems of Ocean Shipping*, delivered by Admiral Hutch I. Cone, chairman, United States Shipping Board, at the Twentieth National Foreign convention, Pittsburgh, April 28, 1933.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

IN LIMITATION of liability proceeding, claimants must show not only an error of judgment on the part of those in charge of a vessel, but a lack of that degree of prudence that a master, possessing ordinary skill and prudence, would have exercised under the given circumstances. A disaster which befalls a vessel supplies the knowledge that comes after the event but does not necessarily impeach the judgment of those who decided that it was safe to do what was done. Of course, a master should use every reasonable safeguard, giving heed to all available sources of information respecting weather conditions, including the radio, because a standard of due care is not necessarily dependent upon mere statutory enactment but must be tested in the light of advancing knowledge, experience, and the most modern appliances of navigation which have become recognized as regular equipment by common usage.—CARROLL, 60 F. (2d) 985.

* * *

STEAMSHIP company issuing through bill of lading was held, in the case of *CAYO MAMBI*, 1 Fed. Supp. 117, to be without authority to limit liability by accepting a local bill of lading containing an agreed valuation clause for a sum smaller than that contained in the through bill, and especially when the valuation is less than the actual value of the goods. The liability of a second carrier is measured by its own contract, not by the through bill of lading.

* * *

RISK of injury is not assumed by a seaman unless such risk is so dangerous that no man of ordinary prudence would have done what he did. Though true that no custom will justify an unreasonable practice, with respect to assumption of risk, custom, if not a negligent one, may often justify a given course of conduct.—MANGORE, 1 Fed. Supp. 138.

* * *

EVIDENCE disclosing that an overtaking steamer, traveling much faster than an overtaken tug, indicated its intention to pass, and without having received an answer from the tug proceeded ahead, on the assumption that the tug would take care of itself, and collided with the tug, was held sufficient in the case of *Dalzell v. United States*, 60

F. (2d) 1068, to establish the liability of the steamer in deliberately ignoring navigation rules. In this connection the court said: "Operators of vehicles and vessels often seem to think that all that is necessary is to blow a horn or whistle and that this sufficiently complies with the rules and relieves them from further liability in proceeding. It is not the mere making of a noise without more that is intended by the rules and law, but in the case of vessels, a proposal in a reasonable time of a course to be accepted or rejected by the other and, if not accepted, or on the contrary affirmatively rejected, to so control further progress by slowing down or even stopping until the dispute is properly settled, or taking another plainly safe course which is then available. The mere failure to blow any proposed passing whistle by an overtaking vessel may indeed be and usually is considered some evidence of negligent navigation. This for the reason that such failure or disobedience indicates carelessness is not even attempting to arrive at some safe prior agreement as to course. It may be, however, according to the circumstances, that such failure to blow a whistle or failure to have a lookout is found not to be the proximate cause of the accident. The purpose behind all such rules and regulations is to provide intelligent navigation and the exercise of reasonable care. It is not in the mere pulling of whistle cords. Certainly a captain of a tug is not to presume that an overtaking steamer, with plenty of room to pass on either side, would deliberately run him down."

* * *

UNDER a charter party covering a shipment from Cuba to Toronto, containing the owner's guaranty that the steamer could proceed through rivers and canals, the shipowner was not bound to install canal gear at the beginning of the voyage, it was declared in the case of *OLDER*, 1 Fed. Supp. 119, but it was proper, said the court, to install such gear at Montreal, where the canal and lake part of the voyage began. Moreover, the style and type of gear used in the navigation

of the St. Lawrence canals was best understood, could be more readily obtained, and presumably could be more efficiently and economically installed at Montreal. It was not needed on the ship, which was a Norwegian vessel previously engaged in the ocean trade, during the voyage before it got to Montreal. Under the circumstances there was no deviation from the voyage as contemplated by the charter party.

* * *

UNDER a towage contract the tug is not a bailee of the vessel in tow or its cargo, and evidence showing a tug's receipt of a tow in good order and delivery in damaged condition raises no presumption of negligence. The supplying of power by a vessel, usually one propelled by steam, to tow or draw another is towage. The towing vessel, while not an insurer or liable as a common carrier, owes to the owner of the tow the duty to exercise such reasonable care and maritime skill as prudent navigators employ for the performance of similar service.—*Stevens v. The White City*, 285 U. S. 195, 52 Sup. Ct. Rep. 347.

* * *

DISPATCH money arises purely from contract, and is not awarded as a quantum meruit; it is a premium paid by the vessel for days saved that may be used in completing the voyage, and a charter party providing that the charterers might finish loading on the day the steamer was cleared without counting it as a lay day used, "neither shall it count for dispatch money," requires that the clearance days used for loading should be considered as lay days used, for the purpose of computing dispatch money. A weather working day within a charter party providing for lay days is a day otherwise a working day, according to the custom of the port, upon which the weather permits loading, and such a day should be considered the same as a lay day used for the working portion whether loading was done or not, and where the charter provides for demurrage and dispatch money pro rata for every part of a day, it is to be calculated by hours and minutes.—*DREIBERGEN*, 60 F. (2d) 367.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	243	1,466,812	264	1,536,778	
February	237	1,373,856	236	1,380,867	
January	254	1,416,857	245	1,383,630	
December	244	1,307,332	253	1,387,341	
November	227	1,154,961	232	1,175,988	
October	253	1,379,283	244	1,328,561	
September	258	1,634,448	266	1,658,521	
August	287	1,754,583	270	1,636,803	
July	238	1,483,476	254	1,553,215	
June, 1932	267	1,579,970	277	1,650,915	

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	60	192,817	43	141,445	
February	38	105,262	20	56,395	
January	53	154,823	41	142,216	
December	44	141,426	37	116,120	
November	54	154,796	41	130,250	
October	57	167,539	42	115,660	
September	45	123,049	36	99,766	
August	64	175,530	43	113,901	
July	49	130,439	38	85,956	
June, 1932	55	157,399	36	102,354	

Boston

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	85	259,203	65	240,768	
February	83	285,162	53	191,084	
January	97	329,575	56	211,428	
December	98	300,132	64	241,693	
November	88	308,164	59	220,530	
October	99	332,754	68	249,150	
September	114	337,603	91	283,227	
August	117	369,799	103	339,775	
July	121	408,896	101	346,926	
June, 1932	116	342,057	96	322,558	

Portland, Me.

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	9	24,186	10	23,989	
February	19	52,001	19	48,913	
January	14	35,038	13	34,153	
December	17	43,705	16	40,396	
November	7	9,785	6	10,174	
October	8	21,407	7	18,228	
September	9	14,698	9	16,526	
August	14	25,844	14	24,208	
July	9	15,156	10	17,733	
June, 1932	10	25,895	11	26,519	

Providence

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	4	17,052	
February	7	27,520	1	4,393	
January	2	7,473	1	3,171	
December	3	7,918	2	8,820	
November	4	13,673	3	11,066	
October	3	13,133	3	9,683	
September	3	11,450	4	14,471	
August	5	13,418	1	5,071	
July	2	5,918	2	9,634	
June	7	22,359	3	7,151	

Portland, Oreg.

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	20	79,537	43	162,970	
February	25	97,554	34	130,014	
January	24	95,271	33	138,372	
December	22	92,267	41	166,858	
November	19	78,628	41	157,544	
October	25	98,792	45	182,167	
September	25	98,370	37	146,945	
August	22	93,256	32	127,572	
July	21	84,961	24	99,035	
June	20	80,272	25	98,356	
May, 1932	20	82,750	25	99,862	

Baltimore

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	72	228,806	72	223,594	
February	63	195,299	75	226,672	
January	77	247,903	78	252,052	
December	75	238,598	68	224,544	
November	80	254,047	83	262,796	
October	98	281,907	94	281,534	
September	66	190,459	80	241,287	
August	88	243,077	87	245,091	
July	88	255,354	86	255,209	
June	95	299,502	97	294,264	
May, 1932	95	289,042	102	317,751	

Norfolk and Newport News

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	18	56,097	42	111,038	
February	16	49,213	36	82,544	
January	20	58,470	33	76,493	
December	28	77,286	38	92,621	
November	20	54,678	35	79,516	
October	15	60,775	36	80,792	
September	26	74,483	53	118,437	
August	25	53,025	37	86,952	
July	23	72,755	36	91,832	
June, 1932	18	51,803	48	114,222	

Jacksonville

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	7	18,536	9	18,137	
February	6	15,126	7	13,454	
January	3	4,683	8	21,018	
December	10	24,067	10	24,595	
November	10	24,352	2	1,799	
October	8	16,714	8	13,659	
September	7	15,879	7	12,539	
August	8	14,142	9	16,647	
July	8	20,558	7	16,963	
June, 1932	7	12,746	10	20,277	

Key West

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	42	57,720	39	54,508	
February	37	52,615	34	49,320	
January	38	55,322	38	54,692	
December	38	59,058	39	58,604	
November	37	64,384	37	61,961	
October	35	62,394	35	62,394	
September	36	60,309	36	61,405	
August	37	66,432	37	66,313	
July	38	62,503	40	62,486	
June, 1932	37	61,115	39	76,274	

Mobile

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	96	234,328	91	206,064	
February	80	184,669	83	200,850	
January	100	232,451	91	201,671	
December	86	204,295	92	209,061	
November	94	210,195	97	234,590	
October	105	228,041	105	233,510	
September	89	166,896	96	193,213	
August	90	196,453	88	188,375	
July	107	222,810	99	203,444	
June, 1932	91	207,178	93	201,443	

Seattle

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	47	194,485	51	216,803	
February	43	196,979	43	190,338	
January	50	212,954	49	210,083	
December	45	202,731	47	207,521	
November	43	193,530	45	200,513	
October	53	235,224	58	251,334	
September	40	168,740	40	175,635	
August	39	183,141	36	167,807	
July	32	145,560	36	162,923	
June, 1932	36	160,585	32	143,574	

New Orleans

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	161	464,728	161	457,880	
February	128	378,040	127	366,948	
January	135	307,750	145	410,412	
December	151	434,935	157	450,545	
November	146	442,427	156	457,621	
October	140	403,062	150	424,621	
September	151	423,791	139	415,704	
August	160	448,826	156	442,655	
July	166	438,496	171	443,198	
June	170	597,552	164	457,960	
May, 1932	182	517,523	169	472,154	

Charleston

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	35	99,612	29	83,243	
February	24	65,228	24	65,218	
January	28	83,545	23	65,063	
December	24	58,943	24	63,086	
November	33	93,457	30	85,072	
October	14	33,693	12	34,625	
September	21	54,638	20	52,035	
August	15	29,293	18	46,756	
July	17	39,628	14	39,844	
June, 1932	26	80,438	25	78,864	

Galveston

(Exclusive of Domestic)					
Month	Entrances—		Clearances—		
	No. ships	Net tonnage	No. ships	Net tonnage	
March, 1933	19	34,677	83	239,683	
February	17	29,935	69	200,485	
January	23	43,723	79	235,748	
December	24	39,491	103	311,999	
November	29	64,016	102	314,452	
October	26	54,231	94	277,977	
September	25	38,083	85	236,532	
August	29	44,389	71	202,598	
July	27	50,302	79	220,489	
June	28	47,046	81	226,542	
May, 1932	38	84,468	86	259,026	

Los Angeles

(Exclusive of Domestic)				
Month	—Entrances—		—Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1933	152	550,205	167	599,191
February	143	528,613	155	543,628
January	162	633,944	169	668,576
December	152	538,392	156	560,901
November	194	645,826	195	662,569
October	209	641,131	201	657,641
September	223	581,402	222	610,443
August	253	653,836	244	635,164
July	226	646,417	230	617,947
June, 1932	168	588,184	162	558,945

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

THE most outstanding development in new construction of merchant tonnage is the announcement that the firm of Gibbs & Cox Inc., New York naval architects, now have under preparation plans and specifications for a third cabin liner for the United States lines. Estimated cost of the new liner will be something over \$11,000,000, as it is understood that a number of important changes are contemplated. Details are lacking.

The new vessel's tonnage may be about 30,000 gross as compared with 24,289 for the MANHATTAN. The length over all, it is said, will be about 750 feet as against 705 feet for the MANHATTAN, and it is expected she will have a speed in excess of 22 knots compared with 20 knots for the first two. The total passenger capacity in cabin, tourist and third class, it is said, will be 1500 as compared with 1230 for the MANHATTAN. A number of other important changes will also be made. For instance, every stateroom in the cabin class is to have a private bath which is an innovation for transatlantic liners.

The United States lines is anxious to begin building the new vessel as promptly as possible in order to round out the service so successfully begun by the MANHATTAN and soon to be augmented by the addition of the Washington. It is understood that bids will be requested at an early date and that contract will be awarded promptly. The construction of the new ship will mean much to American shipbuilding and will give employment not only to a large force in the yard receiving the contract, but also to thousands of other men employed in supplying materials and equipment of all kinds.

By adding this third super cabin liner, offering accommodations and conveniences in many respects superior, to those on the LEVIATHAN for instance, the United States Lines will very materially reduce operating costs while at the same time providing the most modern and attractive service. It is well known that the MANHATTAN since entering service last August has become a popular and successful ship. The WASHINGTON beginning service on May 10, it is confidently expected, will duplicate the favorable record of the MANHATTAN and when the third vessel is added in the spring of 1935, the line will have a well rounded efficient transatlantic service which, by its popularity with travelers and shippers of express freight and because of economy in operation, will not only lend pres-

tige to the American merchant marine but will be profitable to the operator.

Washington Builder's Trial

The S. S. WASHINGTON, a sister ship of the MANHATTAN of the United States Lines, successfully completed her builder's trials off the Delaware Capes on April 2. The new liner left the yard of the builder, the New York Shipbuilding Co., Camden, N. J., 5:35 a.m., April 1, and trials, which were held in the open sea of the Delaware Capes, proved entirely successful, according to officials of the United States Lines and of the New York Shipbuilding Co. Though no attempt was made to let her out, it was reported that she easily made the contract speed of 20 knots developing 125 revolutions per minute of the propellers. A number of turning and backing tests were also successfully carried out. Anchor tests were made, compasses adjusted and other navigating equipment was given its initial trial.

Official trials of the WASHINGTON are to be held April 24 and 25. Capt. William H. Lee, marine superintendent, and George H. Gaskin, superintending engineer, of the Roosevelt Steamship Co., were on board during the trials as observers for the owner.

After her official sea trials, April 24 and 25, the WASHINGTON will proceed to New York where she will join her sister ship the MANHATTAN in the New York, Cobh, Plymouth, Havre and Hamburg run on May 10.

Naval Shipbuilding Program

If the navy building program proposed by Representative Carl Vinson of Georgia, chairman of the house naval affair committee, is adopted by congress, and the secretary of the navy, Claude A. Swanson, has said that he was hopeful it would be, it will mean beginning the construction of thirty naval vessels, to be spread over a period of time.

If this program to build up the navy to treaty strength, or somewhere near this point, is undertaken, it will mean some very necessary work for the shipyards. For the time being, practically all of the immediate program of merchant shipbuilding has been completed. A few additional merchant ships must be undertaken shortly under the terms

of some of the more recently awarded mail contracts and some additional merchant work may develop but for the time being shipyards are desperately in need of work and they should be given the major portion of the proposed new naval building. The work can undoubtedly be done at less cost in private yards than in navy yards. The government at this time would also receive a substantial benefit in the reduction in cost which is now possible.

Floating Dry Dock Award

In the April issue of MARINE REVIEW, the Dravo Contracting Co. was given as low bidder for constructing a floating dry dock for the naval base at San Diego, Calif.

Word has now been received that the Dravo Contracting Co. has been awarded the contract at a cost of \$352,680. The new dry dock is to be 361 x 60 x 24, feet, and will be built at the Wilmington, Del. yard of the Dravo Contracting Co.

Orders New Ferryboat

On April 10 announcement was made that contract had been awarded to the Pusey & Jones Corp., Wilmington, Del. for building a large ferryboat for the Virginia Ferry Co., a subsidiary of the Pennsylvania Railroad Co.

Bids were first received for this vessel on Jan. 3. The contract price is not stated. The new vessel, which is to operate on Hampton roads between Cape Charles, Va. and Little Creek near Norfolk, Va., is to be of substantial steel construction and will be about 250 feet in length, with a draft of 10 feet. Steam propelling machinery in twin screws will give a service speed of 18 miles per hour.

Plans and specifications for the new vessel were prepared under the general supervision of W. R. Elsey, superintendent of floating equipment, Pennsylvania railroad, Jersey City, N. J. Mr. Elsey will have charge of construction for the owner.

It is understood that the minister of marine of the French government has had plans prepared for building a new liner of the same type to take the place of the L'ATLANTIQUE.

Tender Arbutus Launched

The new lighthouse tender ARBUTUS, for lighthouse and buoy work along the coast of Massachusetts, was launched at Wilmington, Del., March 25. The vessel was christened by Miss Elizabeth Duncan Putnam, daughter of George R. Putnam, commissioner of lighthouses.

The ARBUTUS, a twin screw, steam propelled vessel, 175 feet long, is to cost approximately \$240,000. This vessel has engines of 1000 horsepower, and is of an entirely new design, specially adapted for the work of maintaining buoys, building minor lights, and carrying supplies to lightships and isolated lighthouses. The ARBUTUS has been designed for service in outside waters, and the lines of its hull are such as to produce an excellent sea boat.

It is expected that the ARBUTUS will be completed within a short time and it will then proceed to Boston for outfitting, taking up its duties during the spring rush of work, replacing the tender AZALEA, in the second lighthouse district.

Costanzo Coal Co., Wheeling, W. Va., has purchased the stern wheel Ohio river steamer WM. MULLER, which will be used in the coal-towing trade. This company recently bought ten 175-foot steel barges from the Marietta Mfg. Co., Pt. Pleasant, W. Va.

Jones & Laughlin Steel Corp., Pittsburgh, has launched the second of two all-welded steel tank barges for the Producers Pipe Line Co., Louisville, Ky., at its South Side ways, Pittsburgh, on the Monongahela river.

Welded Oil Barge Ordered

The F. D. Koehler Co., Inc., Richmond Terrace, Staten Island, N. Y., has awarded to the Staten Island plant of United Dry Docks, Inc., contract for the construction of a 175,000 gallon

non-propelled steel oil barge of truss-weld design and work will be started at once.

The vessel, which was designed by W. S. MacDonald, naval architect, 90 West street, New York, will have a molded length of 100 feet molded beam 33 feet, molded depth at side 9 feet, at center, 9 feet 3 inches. The center bulkhead, 80 feet long will have on each side nine oil compartments, seven of them 10 feet long and two 5 feet long. The No. 6 compartment on each side will carry heavy heated oil and will have a double bottom.

United States Engineers

On March 31 the United States engineer office, San Francisco, requested bids, to be opened April 14, for repairing the United States seagoing hopper dredge, A. MACKENZIE. A long specification accompanied the request indicating that it is a major overhaul.

The same United States engineer office on April 3, requested bids for repairing the seagoing hopper dredge SAN PABLO. This also is a major overhaul, as this dredge was recently raised after sinking in navigable waters. No word has been received as to the successful bidder.

The United States engineer office, Louisville, Ky., requested bids to be in April 25 for docking and repairing one derrick boat, one dump scow, and three barges.

The United States engineer office, Memphis, Tenn., has requested proposals for alterations and repairs to the stern wheel towboat AUGUSTA J. NOLTY, OSCEOLA and Lts. AUGUSTIN, GURNEY and LEWIS.

Legislation has just been enacted by the commonwealth of Massachusetts providing for the additional appropriation of \$50,000 for the purpose of removing old hulks and otherwise cleaning up the waterfront of Boston inner harbor. The contract has been awarded to the Bay State Dredging & Contracting Co.

British Shipbuilding Up

Shipbuilders on the Tyne have reason to be decidedly more optimistic due to contracts placed and future prospects, according to a report to the department of commerce.

Shipbuilders on the Clyde fared well in receiving a good part of the orders placed by the British admiralty and are looking forward to additional work when the 1933 program is announced next fall. This assures a certain backlog of work for several years to come so that the feeling is now prevalent that the worst of the depression is over.

The naval building under way or contracted for includes, ten destroyers, a cruiser, and five other vessels representing nearly \$21,000,000. This work will be spread over three or four years. Other recent orders include three cargo steamers and a large destroyer depot vessel.

In addition to the naval construction, work is also under way on about 50,000 gross tons of merchant shipbuilding. Altogether, the work now in hand gives employment to about one-third of the shipbuilding capacity on the Clyde. Another hopeful sign is the number of inquiries for new tonnage making overtime work necessary in the design departments of several yards.

German Warship Launched

Christened, ADMIRAL SCHEER in honor of the German naval hero of the battle of Jutland, the second "pocket battleship" was launched on April 1 at Wilhelmshaven, Germany. The new vessel, like the first of her type, the DEUTSCHLAND, is being built under the limitations imposed by the Versailles treaty.

The name given these new German naval vessels indicates that the German engineers, under the limitations imposed, have apparently succeeded in producing very powerful vessels which in their own appraisal can defeat any vessels which can overtake them and can run away from any vessels which could defeat them.

Bunker Prices

At New York			At Philadelphia			Other Ports	
Coal	Fuel oil	Diesel engine	Coal	Fuel oil	Diesel engine	April 18, 1933	
Alongside	alongside	oil alongside	trim in bunk	alongside	oil alongside		
per ton	per barrel	per gallon	per ton	per barrel	per gallon		
Apr. 18, 1933...4.30@4.60	.80	4.08	Apr. 18, 1933...4.30@4.60	.80	4.04	Boston, coal, per ton..	\$7.45
Mar. 18.....4.30@4.60	.80	4.08	Mar. 18.....4.30@4.60	.80	4.04	Boston, oil, f. a. s. per	
Feb. 18.....4.30@4.60	.80	4.08	Feb. 18.....4.30@4.60	.80	4.04	barrel.....	\$0.69
Jan. 17.....4.50@5.00	.80	4.08	Jan. 17.....4.50@5.00	.80	4.04	Hampton Roads, coal, per	
Dec. 16.....4.50@4.75	.80	4.75	Dec. 16.....4.00@4.75	.80	4.04	ton, f.o.b. piers \$4.25 to \$4.50	
Nov. 18.....4.50@4.75	.80	4.08	Nov. 18.....4.00@4.75	.80	4.04	Cardiff, coal, per ton....	13s 9d
Oct. 18.....4.50@5.00	.80	4.08	Oct. 18.....4.50@5.00	.80	4.04	London, coal, per ton....	s -d
Sept. 18.....4.50@5.00	.80	4.08	Sept. 18.....4.50@5.00	.80	4.04	Antwerp, coal, per ton....	16s 9d
Aug. 18.....4.50@5.00	.90	4.08	Aug. 18.....4.50@5.00	.90	4.04	Antwerp, Fuel oil, per ton67s	6d
July 18.....4.50@5.00	.90	4.04½	July 18.....4.50@5.00	.90	4.08	Antwerp, Diesel oil, per	
June 18, 1932...4.50@5.00	.80	3.70	June 18, 1932...4.50@5.00	.80	3.69	ton.....	82s 6d
						British ports, Fuel oil...	67s 6d
						British ports, Diesel oil..	82s 6d

Lack of New Cargo Vessels in American Shipping

As there has not been a single general cargo vessel built in the United States for overseas service since the beginning of 1923, the large number of American freighters employed in this trade is sometimes overlooked. Out of 281, American vessels each of 1000 gross tons or over actively engaged in our overseas foreign trade on Jan. 1, 1933, no less than 210 were freighters.

Including vessels engaged in our nearby foreign, coastal and non-contiguous services, out of 1020 vessels of 1000 gross tons or over, 576 were freighters; and including laid up vessels, out of the total American seagoing fleet of 1716 vessels each of 1000 gross tons or over, 1118 are freighters.

Records show that since Jan. 1, 1923 nine freighters, each of 2000 gross tons or over, were built for service under the American flag, and among these there is not one for general cargo in the overseas trade.

All these vessels were built in American shipyards, except the SEATRAN NEW ORLEANS which was built in England.

The following table shows the number of seagoing freighters, each of 2000 gross tons or over, built for each nation from Jan. 1, 1923 to Sept. 30, 1932.

United States	9
Great Britain	913
Germany	140
Japan	79
France	57
Italy	39

The above table shows that the United States is out-classed by all other nations in modern freighters, although as pointed out earlier the bulk of our merchant fleet consists of vessels of the freighter class.

Modern tonnage is designed for higher speeds than war-built tonnage, and it is not surprising to discover that whereas the United States merchant fleet includes 58 seagoing freighters which operate at speeds of over 12 knots, the British merchant fleet includes 428 such vessels; and while there are only 18 American-flag freighters which exceed 14 knots in speed the British own 93 such vessels. While the British have 2 freighters whose normal speed exceeds 16 knots, and the Japanese have 7 such vessels, the United States has none.

That foreign countries are fully awake to the importance of seagoing freighters in their merchant fleets is shown by the fact that since Nov. 1, 1932 orders have been reported for 40 cargo vessels placed abroad, including 26 for British ownership, 12 for Japanese ownership and 2 for French ownership.

The National Council of American Shipbuilders believes that notwithstanding the fact that our foreign trade services are essentially liner services that a considerable number of

vessels of the purely cargo type are essential to the up-building of our merchant marine and to hold our place in competition with foreign modern vessels of the purely cargo type.

Naval Architects Meet

A special meeting of the Society of Naval Architects and Marine Engineers will be held on May 9 at the Commodore hotel, New York City. At this meeting G. S. Baker, superintendent of the William Froude laboratory, Teddington, England, will deliver a lecture on the subject of "*Experiment and Practice in Merchant Ship Design, Ancient and Modern.*"

The lecture will be divided into two parts, the first part being a general and historical survey of the subject, to be given at an afternoon session starting at 4 p.m. Following the first lecture, dinner will be served at 6 p.m. After the dinner Mr. Baker will present the second lecture which will be of a technical nature dealing with modern theories of resistance and propulsion and the design of modern vessels and propellers.

Copies of the lecture, it is expected, will be available at the meeting. It will be published in the transactions of the society.

Shipbuilders Meet

(Continued from Page 23)

may be delayed until there is a better outlook for a revival of business.

There will be some reconstruction or betterment of old vessels during 1933 and if business in general improves, an increased volume of repair work is anticipated.

While the outlook for merchant shipbuilding for the immediate future is not encouraging there is much agitation in Washington to begin the construction of our navy to treaty strength with a large program for this year. If authorized, it is anticipated that a substantial part of the work will be performed in private shipyards. This work would do much to preserve the industry and maintain its efficiency.

H. G. Smith, president, and all other officers, directors and members of the executive committee of the National Council of American shipbuilders were re-elected. L. H. Korndorff, president of the Federal Shipbuilding & Dry Dock Co. was elected as a new director and S. W. Wakeman, vice president of the Bethlehem Shipbuilding Corp. Ltd., was appointed as a new member of the executive committee.

Announcement of the appointment of Cameron Rogers as publicity director of the Grace line was made April 19, by Daulton Mann, executive vice president of the company.

Baltimore Carries on Trade at a Good Volume

The highly abnormal conditions of the recent past have had their effect on the port, as well as on every other form of commerce. Events since the first of the year have added to the hardships under which maritime and trading activity have been bending for two years. But in the general gloom we should not lose sight of the fact that the port of Baltimore is still very much in business, that it continues to carry on a surprising volume of vessel and cargo traffic, and that today, in a new and special sense, it is helping the city to maintain its commercial equilibrium.

In February, for example there were deep-water entrances and clearances totaling 362 vessels of 853,306 net tons. This is a decrease of only 15 per cent under February of last year. It is true that they are carrying less cargo, but the foreign trade ships alone handled exports and imports valued at \$4,449,619. Even with a greatly reduced total trade volume, 7 major exports increased in tonnage over February, 1932, and 7 increased over January. Eleven major import commodities increased over February 1932, and ten over January, 1933. Grain was at the disappearing point, but flour exports were better than the comparable periods, and there was \$444,530 in customs receipts.

The foreign trade and shipping interests of this Port are looking ahead with hope, if not with certainty. Reciprocal tariffs and trading agreements are expected under revised governmental policies. These are vitally necessary and must come quickly.

Seatrain Lines Service

On April 7 the shipping board adopted a resolution authorizing the Seatrain Lines Inc. to carry on coast-wise trade between ports of New York and New Orleans via Havana in the new Seatrain vessels for a period commencing April 6, 1933, and continuing until 30 days after the effective date of the final orders of the interstate commerce commission in connection with this case.

Also, the shipping board authorized the Seatrain Lines Inc. upon the making of the final orders of the interstate commerce commission in these proceedings, to make such further application with reference to this present resolution as the circumstances in the case may require. It was also further stated that the United States shipping board reserves the right to alter, modify, change or rescind the authorization hereby given upon such terms and conditions as the board may fix.

Equipment Used Afloat and Ashore

Using X-ray to Determine Thickness of Plating—Applying Power to Air Turbine Ventilator—Small Circuit Breakers

EVERY shipbuilder is familiar with the ordinary methods of determining the extent of corrosion in the hull of a ship. These methods are limited and of destructive nature. Inspectors, therefore, are searching for a more accurate and reliable method. X-rays offer the solution. They enable us to determine the actual thickness of a plate in ship hull construction or in a boiler without destroying or in any way harming the material.

For this purpose a simple method has been developed by the St. John X-Ray Service Corp., 505 Fifth avenue, New York. Through the use of a lead diaphragm the inspector is able to check-up on corroded areas by a single X-ray exposure. The set-up for this method may be described as follows:

The distance h between the target of the X-ray tube and the plate to be measured is known. So is the width a of the lead diaphragm which must be placed close to the surface of the plate facing the tube. Its inner edge should be cut in a 45-degree angle, the wider opening toward the X-ray tube; the narrow opening, however, is the required width a ; its shadow is recorded on the resulting X-ray film and measured as b . The unknown thickness of the plate is x . The following proportion then exists:

$$a : b = h : h + x$$

or

$$x = \frac{hb}{a} - h$$

A practical example of this may be illustrated. In a particular case where the following conditions are prevailing:

$$\begin{aligned} a &= 5 \text{ inches} \\ b &= 5\frac{1}{4} \text{ inches} \\ h &= 21\frac{3}{4} \text{ inches} \end{aligned}$$

$$x = \frac{21\frac{3}{4} \times 5\frac{1}{4}}{5} - 21\frac{3}{4}$$

$$x = 1.0875 \text{ inches.}$$

As a matter of fact, the test was made on a one inch plate and the result of 1.0875 inches is quite accurate. It is very important to place the film close up to the object and to have the entire set-up in absolute alignment with the focal spot of the X-ray tube; otherwise incorrect results will be unavoidable.

An X-ray installation has been used in a Dutch shipyard to determine the thickness of the hull plat-

ing and thus check-up on a corroded area while the ship is being overhauled. This method should also prove of great value for examining boilers after they have been in service for a considerable length of time, to determine the thickness of the shell.

Editors note: The above item was prepared for MARINE REVIEW by Herbert R. Isenberger, secretary, St. John X-Ray Service Corp.

New Turbine Ventilator

Allen Corp., Fourteenth avenue at Howard street, Detroit, recently developed a turbine ventilator which introduces a new type of exhaustor to the ventilating field. As a wind-operated ventilator it is efficient; electrically operated, it is a blower exhausting a predetermined amount of air regardless of temperature difference, wind velocity and direction, or other variable conditions. The worm geared-head motor and clutch are mounted on top of the rotor, as shown in the illustration, leaving the throat of the ventilator clear of obstructions.

Specifically the new unit may be employed for removing gas and fumes which can be handled easily.

With the new electro-wind turbine ventilator no penthouse is required, inasmuch as the wind regard-

less of direction or velocity actually aids the exhaust of the unit. It is easily installed on any standard ventilator base and in most cases may be plugged into a lighting circuit.

The regular turbine ventilator produced by the same company has been used for years for the solution of ventilating problems on the finest vessels. The recent development, described here, of combining with it an electric motor drive, overcomes the difficulty sometimes encountered on shipboard when the ventilator is placed so that irregular heights and other wind obstructions tend to nullify the effect of the gravity type of ventilator and also somewhat limits the use of the wind driven turbine.

The new combination wind and electric driven turbine ventilator is not affected adversely by wind direction but is assisted by any wind pressure regardless of the direction. This new ventilator should, therefore, be particularly suitable for shipboard use where obstructions on the weather deck is a rather common condition.

Small Circuit Breakers

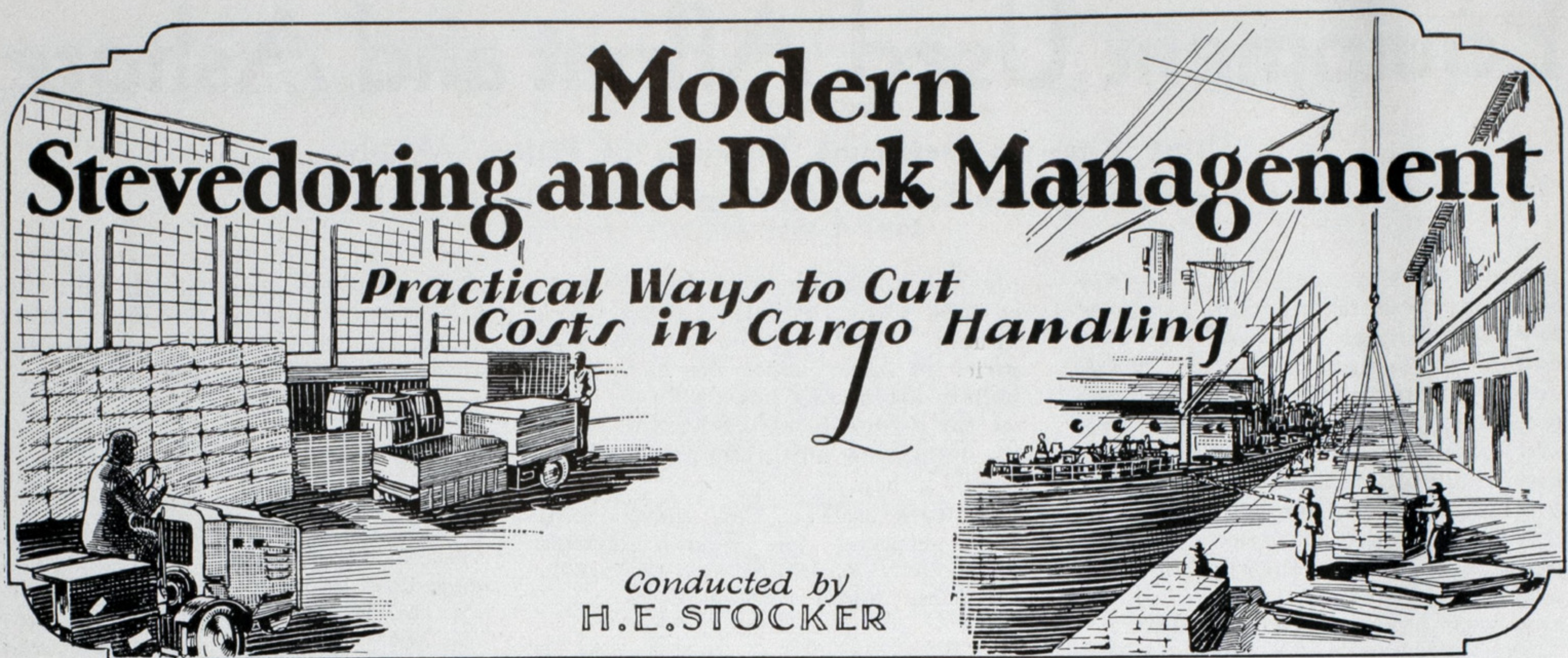
A COMPLETE line of small circuit breakers, rated up to 600 volts and 600 amperes, and designed for the control and protection of industrial circuits, house service entrance, branch circuits, refrigerators, ranges, etc., has been announced by the General Electric Co.

In addition to offering such inherent advantages as speedy restoration of service and tamper-proof protection, these new breakers, employing a unique principle of arc interruption, operate quietly and permit no external arc. The interruption takes place within a closed metal chamber. When an over-current trips the breaker, the contacts are disengaged within the metal chamber. The arc, which is drawn between the contacts, generates a pressure which increases the resistance of the arc path so rapidly that the circuit is interrupted in 0.008 of a second.

The new breakers are trip-free from the operating handle and cannot be held in the closed position when an overload exists on the circuit. The "on" and "off" positions are clearly marked on the front cover and a yellow target appears in view when a breaker opens on an overload.



Allen Electro-Wind turbine ventilator, with motor cover removed



All Departments Must Co-operate for Increased Business and Profits

By H. E. Stocker

EFFECTIVE co-operation between the operating and traffic departments is necessary for best overall results, yet it is characteristic of most organizations that the co-operation between the two departments is far from effective and is often almost entirely lacking.

In rehabilitating shipping company organizations so that they may weather the depression, this matter of co-operation within the company should be given attention. The result will be that costs are cut and traffic increased. This conclusion is based on many years of experience in traffic and operating work, and in handling claims, supplemented by additional contact with the financial accounting divisions of the shipping business.

Giving Something Away

A shipping company's problems must be viewed from every aspect, and the results of actions taken and methods used, in their effect on successful operation must be considered as a whole rather than for any one department. Guided by this point of view the destructiveness of lack of effective co-operation between the traffic and operating departments has been brought out forcibly.

Operating costs are increased and schedules disrupted by unwise booking of cargo by the traffic department. If a lot of long steel is expected to arrive shortly before sailing, it may be necessary to hold open cargo space, with the result that overtime

must be worked, the ship sails late, extra fuel is expended to make up time and so on, to the point where most, if not all, the profit on the steel is lost.

In the drive to "get business" the traffic department will agree to shift a steamer for a small lot of cargo, so that considering all the costs incident to the shift the company fails to make a profit. The traffic department may claim that the shift should have been made even at a loss, to retain the good will of the shipper. However, a sound business man, considering the business as a unit, does not consider it good business to sell anything at a loss, whether it be transportation or automobiles.

On the other hand, the operating department will often object to handling certain cargo. Take soda ash for an example. The operating department objected vigorously to handling of this commodity because of damage to other cargo, and the higher wage rate which they claimed it was necessary to pay the longshoreman. Over a period of years the traffic department continued to accept soda ash and the operating department continued to object. This constant friction consumed energy which should have been used to more profitable ends. When competition is as severe as it has been in shipping for the past twelve years, traffic men should not be fighting their operating department but working with them to get business to cut costs.

In another case, several thousand dollars revenue was lost because the operating department refused to accept a certain class of cargo because of heavy claims that resulted. The business-like manner of solving this problem would have been not to refuse the cargo, but find a way to handle it without heavy claims. This was done, but some ten months later and after thousands of dollars of profit were lost to a competitor. The protests of the traffic department in the meantime were of no avail.

Aiding the Traffic Man

Point of view is the most important factor. This is largely the result of the basis on which a man's work is judged. Traffic men are judged by the business obtained at profitable rates. The operating department by claims, operating costs, maintenance of schedule and insurance claims, etc.

Traffic men are constantly in contact with all varieties of people from whom they are trying to get business or to keep happy so they will continue to get business. They have no dictatorial powers over these people, and therefore must accomplish their ends by the methods of the politician rather than the methods of a captain or an engineer.

The wear and tear on a man's nervous system is great. If this is combined with a worrying kind of supervision from the office or a lack of support from the office and from the operating department, the re-

sults are not satisfactory.

Traffic men, when judged correctly, are judged by their ability as business getters; usually this is expressed in number of tons rather than in dollars of net profit. Therefore, they fight to get tons and resent strongly obstacles put in their way by the operating department. They want cargo accepted which the operating department does not want to handle because it is expensive to handle or is apt to damage other cargo. Possibly the operating department fears that handling the cargo in question may result in large claims; delays may result from accepting cargo for late delivery. In one company, if the traffic department accepted cargo to be delivered at the pier after 5 p. m. the pier organization raised a great fuss.

The traffic department accepted the cargo to keep the shipper happy; the pier complained because of the additional cost involved and because it disturbed the even tenor of their ways. Getting the business was a secondary consideration.

Consideration must be given to the fact that because of the condition described, a different type of management is found in the traffic department. There is less ruling with an iron hand. A freight solicitor is out on the street away from immediate supervision over three quarters of his time. Much depends on how he works "on his own." His effectiveness as a salesman under these conditions depends on temperament, training and how he is handled by his superior. The most effective managers do not hold a tight rein on their solicitors, but leave much to their initiative. The superior aids them in obtaining results by supplying ideas and information and training them in every way possible to become producers.

The lack of effective co-operation between the two major departments of the business is very real. Is effective co-operation very unreal? Is it something to be theorized about without the theorizing leading to definite constructive achievement? Definitely no! Years of experience in transportation organizations and constant study of organization management however, have made this clear.

The first consideration in improving the co-operation between the two departments is not to expect too much. No human organization is ever perfect. The comparative effectiveness of organizations can be accurately judged only by their "batting average."

The best results are obtained when the chief executive of the company takes an active interest in every phase of the company's activities and has had experience which makes this interest of the highest value. In three cases with which I am fam-

iliar, the chief executive took an active interest in the traffic department and the operating department. In the first company, the chief executive had had operating experience in his earlier years. When he got to the top position, he took an active interest in getting the business and became a good traffic man because he realized that he needed business if the company was to continue to exist. His operating experience taught him the practical difficulties in handling cargo economically. The result was that he acted as "co-ordinator" and the company benefited greatly.

In another case, a captain after years of experience at sea, and in shore jobs, became president of a line. He had had no traffic experience. However, he did have the good sense to realize that cutting costs, keeping ships on schedule, etc., were of no avail, if the traffic department failed to get the cargo. This president also realized that everything was secondary to "getting the business." Cutting costs is of little avail if there is little cargo to handle. Sooner or later the company ceases to function.

The Other Fellows Difficulties

Preaching tolerance and co-operation is easy. The development of these in a practical way is extremely difficult. It required executive skill of the highest order if the results are to be equal to that found in the best managed organizations. Executive skill of the first order is rare. The problem concerns itself rather with the usual run of organization, the usual run of executives and other personnel.

Improved results can be obtained in several ways. Traffic men should make frequent trips to the terminals of the line and watch cargo handling operations, and learn something of how the paper work on the terminals is handled. This will do two things. First, it will give them operating knowledge, second it will give a changed and better point of view. They will eventually realize that there is a limit to the cargo which may be put into the 'tween-decks of a ship; that a great deal of cargo may be stowed in the lower hold and get as good, if not better, stowage than in the 'tween-deck. The problem of stowing last minute arrivals, particularly when a ship is loading for a large number of discharging ports, will be brought forcibly to their attention.

On the other hand, this contact with the traffic department will have a beneficial influence on the operating department. The operating men will learn the difficulties encountered in getting cargo, of the necessity of placating the shippers and consignees in every way possible and of the destructive effect of a bad rec-

ord on claims.

Recently, a steamer sailed without waiting for five additional carloads of freight. The necessary delay would have been short and would not have materially delayed arrival at the destination port. The result was that this freight was delayed a week. A better traffic point of view would have prevented this case of poor service. Constant contact with traffic men would tend to create this better point of view.

These trips to the terminals are advisable also because of the fact that a salesman should be familiar with that which he is selling. A freight solicitor is selling transportation service and to sell it successfully should know something about the details. For example, recently a freight solicitor refused some cargo because he did not think that it could be handled without damage. After several carloads had been lost, a man with operating and traffic experience called on the shipper. It was at once apparent that the cargo could be handled successfully. This man's traffic experience had fitted him to "sell" this fact to the shipper. The "sale" was completed.

This case was handled more effectively by combining operating and traffic knowledge in one man than having both an operating and a traffic man call on the shipper. The operating man, if not trained in "selling" may have caused the "sale" to be lost.

There was hardly any greater shortcomings in intercoastal organizations with which I am familiar than the lack of proper co-ordination of effort between the Atlantic and Pacific organizations. This had resulted in two groups with a company working on different policies and different methods not required by any difference in conditions.

Working at Cross Purposes

This condition can be corrected in part by having executives make frequent trips to become familiar with the men on the other coast, learn their problems, and by discussion and mutual study, gradually develop a co-ordination of effort which will result in more business and lower costs.

Creation of an executive position in charge of a man experienced in cargo handling combined with experience in or knowledge of the traffic department, would be the next best manner of improving co-operation between the operating and traffic departments. If a man with both traffic and operating experience is unavailable, then a cargo man with an open mind and a point of view of the company as a whole rather than the point of view of the operating department alone, would be effective in coordinating the efforts of the two departments.

Cunard Serves Notice

A serious defection from the Atlantic passenger conference is indicated by the action of the Cunard line in giving the necessary six weeks' notice of its intention to withdraw from the conference which regulates first class fare rates. This action is taken because of competition from the fine new cabin ships. Since the White Star line possesses two of these ships, the *BRITANIC* and *GEORGIC*, this action on the part of the Cunard line would seem to mean that cooperation with the White Star line, considered a requisite by the British government if aid is to be forthcoming for in again commencing work on the Cunard superliner, is now more remote than ever.

The United States lines also announces that in view of the action taken by the Cunard line it would be compelled to withdraw from the conference in order to protect its freedom of action in case a rate war results.

It is hoped that the conference will voluntarily agree upon some equitable basis for fixing rates for cabin liners which will be satisfactory to all concerned. The suggestion has been made that it would be fair to establish fares on the basis of age, size and speed, regardless of the classification of the ship as cabin or first class liner. Some such agreement may come about as a result of the action taken by the Cunard line.

Frank B. H. Krause Dies

Frank B. H. Krause, well known as a teacher of navigation and author of books on navigation, including the *Pilot Guide*, died at the Naval hospital, Brooklyn, N. Y., March 29, at the age of 74.

Born in Prussia, he was educated at Heidelberg and at Bonn universities. He came to America and joined the United States navy, serving for thirty years. He received a citation for bravery in action at the capture of Cervera's fleet in the Spanish-American war.

In 1914 he retired from the navy with the rank of warrant officer and began teaching navigation in Uttmark's Naval academy in Manhattan. After the war he established his own school. Besides the *Pilot Guide* he was also the author of other maritime books including, *Master and Mate*.

Michael J. Moynihan Dies

Michael J. Moynihan, 63, for many years superintendent of the stewards department of the United Fruit Co. died on the evening of April 11, at the Holy Name hospital, Teaneck, N. J.

During his entire business life Mr. Moynihan was actively associated with various phases of the hotel and steamship business. He has been

superintendent of the stewards department of the United Fruit Co. since 1913, and has won an enviable reputation in maintaining a superior service on more than one hundred liners of the company's great white fleet. During the World war he functioned prominently in the food administration department, where his extensive knowledge of ships supplies made him invaluable to the United States Government.

He was widely known and respected in the steamship field as well as in the social life of his community.

The Haskelite Mfg. Corp., makers of plywood and other similar products, has moved its executive offices to 208 West Washington street, Chicago.

Lawyer is Reinstated

Capt. John F. Milliken, executive secretary, Neptune association of masters and mates, has issued a statement concerning the reinstatement of Silas B. Axtell. A part of Captain Milliken's statement follows:

"The reinstatement on April 7 of Silas B. Axtell, who had become widely known and respected among the shipping groups of the world in defending the claims of officers and seamen in maritime cases concluded the history of a disbarment case unique in the annals of the American bar.

"Because this case affected seamen, their legal rights and a recognized champion of those rights, I feel that the reinstatement of Mr. Axtell is a matter of public concern. The decision emphasizes the good old American fundamental that after all we are a government of laws and not men.

"On many occasions Mr. Axtell has served as attorney for the Neptune association and for members of this association. The most notable occasions was when the Neptune association tried to obtain an injunction against the Cunard line to test the British-American liquor treaty. This case went to the Supreme Court of the United States where it was thrown out for lack of equity of the question and constitutionality was never settled."

Correction Is Made

In the April issue of *MARINE REVIEW* on page 25, describing the dredge *OCKERSON*, under "auxiliary equipment," it was erroneously stated that evaporators, distillers, feed water heaters and feed water filters were supplied by the Griscom-Russell Co.

Evaporators, distillers, feed water filters and grease extractors were supplied on this vessel and on her sister vessel *Potter* by the Davis Engineering Corp. The feed water heaters, it is believed, were supplied by the Ross Heater Mfg. Co.

Decline of Foreign Trade

A straight-line drop at the rate of \$10,000,000,000 a year for three years approximately describes the shrinkage in the world's foreign trade since 1929, according to figures released April 10 by the national industrial conference board.

The total value of foreign trade of 24 countries, which together account for about four fifths of the world trade, declined from \$52,895,000,000 in 1929 to \$42,287,000,000 in 1930; to \$30,523,000,000 in 1931; and finally to \$20,051,000,000 in 1932. The decline in the value of foreign trade from 1929 to 1932 amounted to \$32,844,000,000, or 62.1 per cent. From 1931 to 1932 the decline was 34.3 per cent.

The 24 countries are divided into 7 creditor and 17 debtor countries. The creditor countries are those whose income from foreign investments is greater than the payment which they have to make to foreign holders of their own securities. The 7 creditor countries are the United States, Great Britain, France, Netherlands, Belgium, Switzerland, and Sweden. Debtor countries are those that pay more to foreign investors than they receive from their investments abroad.

Deck Covering Is Used

Our attention has been called to the omission of the items on rubber flooring and deck covering for some of the distinctive ships in the April issue of *MARINE REVIEW*.

More than 10,000 feet of rubber tile was manufactured and installed on the Matson liner *LURLINE* by the United States Rubber Products Inc. This same company also furnished many thousand feet of rubber tiling for the *ANTIGUA*, of the United Fruit Co., and all of the rubber tiling for the *ACADIA*, of the Eastern Steamship Co.

More than 75,000 feet of deck covering, 6000 feet of which was decorative work, was installed on the S. S. *MANHATTAN* by the Asbestolith Mfg. Co. An equal amount has also been installed by the same company on the sister ship *WASHINGTON*.

This information was not available at the time preparation of the data for the distinctive ships was under way and we are glad to give this additional information now.

T.A. McQuilling Appointed

Graham M. Brush, president of the Seatrain Lines Inc., recently announced the appointment of Thomas A. McQuilling as marine superintendent. Mr. McQuilling will be located at the company's terminal in Hoboken, N. J.

Useful Hints on Cargo Handling



IN A recent address by D. C. McPherson, assistant to the operating manager of the American Hawaiian Steamship Co., consideration is given to ideal mechanization in cargo handling. Attention was called to the many ingenious methods applied in handling materials and finished products in industry, but it was also pointed out that the application of similarly complete mechanization to the handling of cargo in connection with the loading and discharging of vessels presented many different and serious problems. In this connection Mr. McPherson said in part:

"However, some improvements along this line have been made, the principal one of which has been elimination of the two-wheeled hand truck and hand drawn four-wheeler with increased use of electric and gasoline jitneys drawing tractor trains. With these have come into use various types of platform skids with suitably designed trucks to handle them. This has made it possible to transfer cargo from ship to dock and dock to car without rehandling of individual packages with enormous savings in labor as a result. Rubber tires and roller bearings for trailer trucks are yet to be adopted. Certain coastwise lines carry the loaded skids, with and without trucks, through to destination and find that the handling labor saved offsets the space lost.

"An extreme development of this idea is the so-called 'Seatrain' which operates from New Orleans to Havana. By the use of special shore cranes and ship elevators, up to 90 freight cars of merchandise are transported each trip without rehandling of the merchandise. The complete elimination of stevedoring expense and the shortened ship turnarounds more than offset the loss of ship space in carrying the railroad equipment. This makes the 'Seatrain' practically a ferry service and if extended to passenger trains will mean that you can get aboard your Pullman drunk in Havana and wake up sober in Chicago.

"Other types of equipment have been utilized to minimize manual handling and a great deal can still be done just by slight changes in method without investment in new equipment. At our San Francisco pier handling was speeded up and dock labor costs cut 40 per cent when sorting of inward cargo at ship's tackle was eliminated and a central 'break up pile' or sorting location established. Such ideas are simple,

THIS page is being devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

cheap and easy of application but until the right stimulus is applied we all have difficulty in seeing light through the hard shell of custom or habit, which conceals so many inefficient and costly practices."

Common Sense and Safety

AT THE greater New York safety conference held at the Hotel Pennsylvania March 1, and 2, the marine section co-operated in the session on stevedoring. Papers were presented on, *Management's Opportunity*, by Commander B. C. Edwards; *The Responsibility of the Foreman*, by Glenn Gardner; and *Maritime Associations and Accident Prevention*, by John P. Magill. Copies of these papers may be obtained from Julien H. Harvey, manager, New York office, National Safety Council Inc., 9 East Forty-first street, New York City.

Mr. Gardner called attention to the large number of accidents due to the absence of ordinary commonsense and enumerated examples, such as using a plank instead of a pry bar, leaving hatch covers off without guard lines, letting oil remain on decks for someone to slip on, and many other similar acts responsible for needless accidents. He referred to a recent explosion on shipboard, killing one man and permanently injuring two others, due to lack of commonsense in a man using a Stillson wrench on a small petcock instead of walking a few feet to get the proper tool.

He emphasized the urgent need of accident prevention work in stevedoring organizations for the reasons that the work is hazardous, the workers are casual and the gang leaders themselves are not always a part of the permanent supervisory organization. Safety, he said, is an important part of stevedoring work and pays its own way. The entire organization must take an active interest in pre-

venting accidents, though the chief stevedore and the dock foreman can do the most. These men will take an active interest if the executives at the top effectively indicate their interest. For this item we are indebted to the April news letter prepared by Henry Blackstone for the marine section of the National Safety council.

A Good Organization

AS UNDERLYING principles of an organization which would apply to the steamship business as well as any other business, W. B. Cornell emphasizes the following:

An organization should be built around the main functions of the business and not around an individual or a group of individuals.

Departments, divisions and subdivisions and their functions should be clearly defined. Details of each department and its divisions should be logically and carefully co-ordinated so that each step of the work can be carried out to the best advantage in the shortest possible time.

There should be centralized executive control.

The personnel should be carefully selected.

Contributory Negligence

An experienced longshoreman injured while discharging lumber from the hold of a ship when the lumber pile toppled over was held guilty of contributory negligence in that he himself helped to create the hole into which the pile fell.

Safety is cooperative, mutually inclusive, from the highest to the lowest. Everyone is concerned, everyone must do his part. To prevail upon all to do so is an educational, not an engineering problem.

Much good work is being done by the marine section of the National Safety council in helping to reduce accidents on piers and terminals. In one of the last news letters of the marine section, the editor, Henry Blackstone, quotes Stanley Baldwin as recently saying: "Facts that are not frankly faced have a habit of stabbing us in the back." He suggests that all shipping men keep accident facts before them, so that these facts may be met and conditions corrected to the end that accidents may be avoided.

Efficient Merchant Marine

(Continued from Page 25)

World Economic conference determined to launch a vigorous offensive against the American merchant marine. For months the shipping board has been preparing the case for American shipping.

Nearer home we encounter a more disquieting form of opposition to our present merchant marine policy. Some of our lawmakers—and a few persons not in public life—argue that the federal expenditures so essential to the support of American shipping constitute an unnecessary drain on the public treasury. The efforts of the administration to balance the federal budget—and I take it for granted that every patriotic citizen supports that laudable endeavor—are used as an argument in justification of proposals to re-examine and revamp the national shipping policy as laid down in the merchant marine acts of 1920 and 1928.

In proposals of this sort there is grave danger of becoming "penny wise and pound foolish." One is tempted to believe that Americans who seek to do away with the present subventions fail to realize the magnitude of the work already accomplished, the great financial stake involved, and the obvious fact that the nation's future welfare depends in great measure on its commercial strength at sea.

They should be reminded that the United States, with a shoreline of 15,000 miles, boasts more than 150 seaports which engage in foreign trade; that federal, state, and municipal authorities have expended for seacoast harbor and channel improvements upwards of \$600,000,000; that a survey recently completed for the shipping board by the army engineers shows that the value of American seaport water terminals, utilized wholly for foreign trade, is nearly \$1,000,000,000; that our shipyards alone represent an investment in excess of \$100,000,000 and could not be replaced today at anything like that figure; and that the book value of our overseas merchant fleet has recently been estimated at \$628,000,000.

Important Progress Made

Are we to abandon these superb facilities, developed at so great an expenditure of time, thought, and money, and turn the entire industry over to the foreigner? Are we to forego the \$300,000,000 which in every normal year accrues to us in freight and passenger revenues through the operation of American ships? Are we to throw out of marine employment thousands of men, afloat and ashore? Are we to saddle American agriculture and industry with the handicap of increased ocean rates and occasionally disrupted service? Are we to entrust the de-

velopment of our foreign markets to aliens? And finally, are we to leave the American navy without an adequate number of effective auxiliaries in time of national peril?

Unless we can honestly give affirmative answers to these questions we should dismiss as unworthy any suggestion that we abolish or curtail the aids granted by congress in behalf of the merchant marine.

Among the truths which must be faced in this time of economic dislocation is that the old days when foreign ships monopolized our ocean carrying trade are gone, never to return. Overseas shipping may some day be rationalized on an international scale. Zones of influence may be agreed upon; trades may be apportioned among the nations; rates and charges may be standardized.

We can bring that day nearer by holding fast to what we have, with a view to further development of the fleet when prosperous times again return. Meanwhile the amount spent annually in subsidies—approximately \$19,000,000 for the fiscal year 1932—should be looked upon as an insurance premium paid to protect the vast investment which the American people have already made in American shipping and for the promotion of foreign trade.

In conclusion, let me say that on March 20 the President of the United States appointed a new shipping board. As chairman of that body, it is my pleasure to convey to you the board's best wishes. We have a feeling that the American merchant marine needs your moral and material support, and that you in turn are not unmindful of the great help that American shipping can be to you in your efforts to blow the breath of life once more into international trade.

The Leviathan Sails

Because of the great expense of operation, with no corresponding possibility of increased revenue, it is understood that officials of the United States line have requested permission from the shipping board to lay up the LEVIATHAN until there seemed to be need for her service. It was pointed out that operation of the LEVIATHAN during the winter months had meant a loss on each round trip of from sixty to one hundred thousand dollars. The proposal is, therefore, a measure of direct economy.

However, it was definitely settled that the LEVIATHAN should sail on April 25 as scheduled. Her west-bound voyage from Bremen will commence on May 5. After that the continuance of the LEVIATHAN in service, though nothing definite has been settled, will probably depend upon the conditions of business and the demand for passenger accommodations as the season progresses.

European Shipping Up

(Continued from Page 19)

the Kysant group by the government after the armistice. Although she was built in these unusual circumstances, and has been British for many years, she would have been liable to a 20 per cent import duty if she had been transferred to British scrappers, so the work had to go to Holland and the employment was lost. But the really Gilbertian part of the matter is the fact that the steel taken from her comes into the country free.

Shipowners Disagree on Subsidy

There is as yet no sign of agreement between British owners as to the advisability of asking a subsidy of the government in order to compete with subsidized foreign shipping, and Germany seems to be in precisely the same boat. Their shipping is quite as hard hit as our own but, like the British, the average German shipowner is opposed on principle to state aid which he always associates with state interference with his business.

The Soviet government of Russia is still complaining bitterly of the inefficiency of its transport services, both sea and rail, and is awarding prizes for improved efficiency. The motorship FELIX DZERSHINSKI, running between Leningrad and London, has won the first prize with marks 6.5 per cent above the efficiency demanded. The idea is good in parts for while it undoubtedly gets better work it creates very bad feeling in the ports etc., whose workers are blamed for poor results, and under Russian conditions this means friction between departments.

In the world of shipbuilding the Russian government is also dissatisfied, but still continues with the most optimistic proclamations. Shipbuilding is one of the weakest points of the first five year plan, where it was far behind schedule in practically every branch, although the workmanship was good. The diesel engineering department was particularly backward and in spite of the large sums spent by the Soviet government on engine plants they were forced to get a number of their new engines abroad, principally from Germany. Yet in the second five year plan they have reckoned on diesel electric propulsion which would seem to accent the difficulty. In the meanwhile they are buying a few steamers and motorships on long credit abroad, which is a direct admission that they have been defeated in their great aim to make their merchant service entirely Russian in every particular. Yet in spite of this they have confidently published their aim to be the second maritime power in the world by the end of the third five year plan.

Up and Down the Great Lakes

Lachine Canal—Automobile Traffic—Shipping Laws—Lake Levels
—St. Lawrence Waterway—Propeller Club—Lake Navigation Opens

THE Lachine canal, connecting the harbor of Montreal and Lake St. Louis was open to navigation on April 19. The total length of the canal is $8\frac{3}{4}$ miles. The five locks have a width of 43 feet, a depth of 14 feet and a length of 270 feet. These locks set the limiting dimensions for vessels proceeding from the ocean to the Great Lakes. Vessels of larger size transfer their cargo at Montreal to canal-sized vessels.

As customary in other seasons, a number of small ocean going vessels will probably pass through to the Great Lakes. Some of these vessels carry coal from Great Britain, wood pulp or newsprint from Sweden, and now and then other kinds of freight from abroad.

For Carrying Automobiles

This is the ninth year that the Nicholson-Universal Steamship Co. has operated in carrying automobiles between Detroit and Cleveland. The season was opened when the steamer CORALIA left Detroit for Cleveland early in April, with a full cargo of automobiles.

A revival in the automobile trade is anticipated and it is believed that the company will have a good season. Since the service began in 1925, more than 300,000 automobiles and trucks have been transported to Cleveland.

Canadian Shipping Laws

There has been considerable agitation in Canada to promptly pass the Canada shipping act which among other things is intended to give Canadian vessels a monopoly in the movement of Canadian grain on the Great Lakes. At the time this is written, it did not seem likely that the bill would be passed at the present session of parliament.

This bill would provide that none but British ships shall engage in the coastal trade of Canada. As we understand it, it is designed to make it impossible, for instance, for an American vessel to take grain, from Port William to Buffalo and then transfer it there into another American vessel bound for a Canadian port. To the Canadians this sort of an operation is merely a way of getting around the Canadian coastwise law which does prohibit, except when it is

set aside by orders in council, the trading of American or other foreign ships between two Canadian ports.

Even though the shipping act as a whole is not passed there is still a possibility that an amendment can be made to the existing Canadian coastwise law this season which would have much the same effect in diverting cargoes to Canadian bottoms. The shipping interests of Canada are, of course, much in favor of the proposed law, while the western grain shippers are inclined to oppose it on account of the possibility that it will mean to them an increase in rates.

March Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of March as follows:

Lakes	Feet above mean sea level
Superior	601.81
Michigan-Huron	577.62
St. Clair	573.40
Erie	570.86
Ontario	244.27

Lake Superior was 0.14 foot lower than in February and it is 0.19 foot lower than the March stage of a year ago.

Lakes Michigan-Huron were 0.03 foot higher than in February and they were 0.56 foot lower than the March stage of a year ago.

Lake Erie was 0.26 foot higher than in February and it was 0.59 foot lower than the March stage of a year ago.

Lake Ontario was 0.01 foot lower than in February and it was 0.99 foot lower than the March stage of a year ago.

Oppose St. Lawrence Pact

During April much opposition developed against the confirmation of the treaty between Canada and the United States for building the St. Lawrence waterway. Among the bodies definitely opposing this project during this time were the chamber of commerce of the state of New York, the Merchant's association of New York and the Maritime association of the port of New York.

The chamber of commerce declared that there was no public demand to have New York state engage in the waterpower business. It also de-

clared that the waterpower development of the St. Lawrence would be a hazardous affair even if the large expenditure were warranted.

The Merchant's association said that a ratification of the treaty should not be considered in local sense, but should be considered on what effect the waterway will have on the United States as a whole. It was of the opinion that public money, which in the final analysis means additional taxation, should not at this time be applied to a project which will not serve the purpose for which it is intended. The association stated that it was firmly convinced that the building of the waterway is not in the best interest of the country as a whole. The project would work chiefly for the benefit of Canada and will prove of distinct injury to a large section of the United States.

The Maritime association of the port of New York also forwarded a resolution in opposition to the confirmation of the St. Lawrence waterway treaty to President Roosevelt and to all members of the United States senate. The grounds for its opposition were that the feasibility and practicability of the scheme are questionable; and that there is no immediate demand for the waterway at this time. It is believed that the St. Lawrence waterway would divert traffic from American ports and will thus do harm to large investments in existing facilities and equipment for handling waterborne traffic.

Propeller Club Meets

The fourth meeting of the Propeller club, port of Cleveland, was held on April 10 at the Hollenden hotel with an approximate attendance of 50 members.

President Kern called the meeting to order and the minutes of the third meeting held Feb. 13 were read and approved. The treasurer's report was read by R. H. Burns. The membership committee reported on applications for membership and all applications were approved.

A motion was made by A. T. Wood, that the Propeller club, port of Cleveland, go on record against the ratification of the St. Lawrence waterway treaty. The motion was seconded and carried unanimously.

Modern Freight Steamer

(Continued from Page 22)

assumed that the engines will develop one indicated horsepower for 1.25 pounds of coal per hour, and that the coal is of such quality as can be obtained on the Tyne for about 14s 6d per ton. (A days consumption varies from about 11.5 tons at 8.5 knots to 23.5 tons at 11 knots)

These curves are, naturally, all drawn out for ideal weather conditions on loaded trial.

To arrive at the probable performance of the vessel when trading between this country and the River Plate, an increased allowance of about 10 per cent for fine weather voyages and of about 20 per cent for average weather voyages should be made.

A separate curve giving the estimated coal consumption on fine weather trial and a second curve 10 per cent in excess of this to represent fine weather voyage consumption in loaded condition are given on a separate diagram. (Omitted from this text)

The curves given on the diagrams are as estimated by the shipbuilder.

By the courtesy of a shipowner an actual voyage result is indicated showing that a fine weather voyage from Emden to Rio gave a result very nearly in accordance with the estimated figures.

At the same time, it is recognized that shipowners cannot estimate their voyages on a basis of fine weather and the result of the worst voyage from Buenos Aires to the United Kingdom is also given.

In this latter voyage of twenty-nine days there were six days of gales and head sea and six days of heavy north-east trades.

The average of this best voyage and worst voyage gives an average speed of about 9.32 knots on a consumption of 17 tons of coal per day at sea for all purposes.

Total Fuel on Voyage

Another way of looking at it is that for a round voyage from Emden to Rio loaded, Rio to Buenos Aires in ballast, and Buenos Aires to London loaded, the total coal consumption for all purposes in port and at sea was 1,161 tons, and the round voyage occupied 89 days from Emden to the United Kingdom, 59 of which were at sea.

It is admitted that better results will be obtained on some voyages where conditions are more favorable, but for estimating the cost of a voyage the average figures given are considered to be a fair basis.

The elevation and general particulars of a modern 9000 tons deadweight tramp steamer are given in the accompanying illustration and table (see page 21)

This paper represents an attempt to show the tramp shipowner that

careful consideration has been given by shipbuilders to the development of efficient tramp ships, with the object of providing the owners of these ships with an economical weapon to fight the intense competition of their foreign, and frequently state-assisted, rivals.

A shipowner has informed us that one of his post-war vessels carrying 8500 tons deadweight burned 1800 tons of coal for the round voyage recorded in this paper.

It will pay owners of such vessels to look into the question of investing in new economical tonnage.

The problem which now confronts the shipowner who wishes to invest money in shipowning is to decide which of the following alternatives he should adopt.

Three Alternatives Open

He can either buy a pre-war vessel at low capital cost and heavy maintenance expenses, or he can buy a post-war vessel and modernize her as far as practicable, or else he can build the very latest thing in modern efficient cargo "tramps" at the relatively low prices now prevailing.

If he adopts the first course he will have low depreciation and insurance charges, but he will have high and possibly erratically high maintenance charges, and a ship with only a limited useful life left. He also runs the risk of having to replace his tonnage when prices have stiffened and no old secondhand tonnage is available.

If he adopts the second course, he will no doubt obtain a cheap ship, but many of these vessels built immediately after the war have notoriously inefficient hull form, and it is debatable whether it is an economical proposition to attempt to rejuvenate their machinery and make the only hull modification possible, namely, streamlining the rudder and stern frame.

If he adopts the third course, he will either build or buy an efficient modern vessel. If he does buy a modern second-hand vessel he should make certain that it really is well designed from a propulsive and mechanical point of view, and built by a builder who understands and has given effect to the latest improvements.

An indication of what an owner should obtain in an efficient modern vessel can be observed from a study of the data presented in this paper.

Lake Navigation Opens

On April 18 it was announced that navigation to the upper lakes will open on April 24. A number of vessels are already to proceed as soon as ice conditions permit. What cargo space was available on Lake Superior has been taken up for grain of which there is 72,000,000 bushels in storage with as much more due to come in. Wheat had

a rate of 6½ cents to Montreal, 2 cents to bay ports; 1¾ cents American and 2 cents Canadian to Buffalo.

The first steamer for the season 1933 to pass through to the upper lakes was the JOSEPH BLOCK of the Inland Steel Co. The BLOCK passed through the St. Mary's river on her way to Lake Superior on April 19. She arrived at Sault Ste. Marie in the morning and encountered no particular difficulty in making way through unbroken ice on Mud lake. She passed through the ice in White Fish bay into open water of Lake Superior.

The L. E. BLOCK followed a number of hours later and went through the locks on the afternoon of April 19. Both vessels will load ore at Superior. The successful passage of these two vessels means the opening of the channel and other vessels will follow both down and upbound.

Object to Carferry Plan

The interstate commerce commission has received a petition from the Wisconsin & Michigan Transportation Co. opposing the proposed operation of carferries by the Grand Trunk-Pennsylvania Transportation Co. between Grand Haven, Mich., and Milwaukee.

It was alleged by the company entering the protest that it is unlawful for the Grand Trunk Western railway which is a subsidiary of the Canadian National railways, to operate this service in conjunction with the Pennsylvania railroad. The claim is made that part ownership in the carferry by a subsidiary of a Canadian company is prohibited by United States laws.

Activity at Chicago

Chicago's Century of Progress exposition extending from June 1 to Nov. 1 is expected to result in a substantial business for boats serving that city. Established boat lines are planning to care for an increased number of lake cruise passengers, while one new line is entering the Chicago field. The newcomer is the Duke line, with a three-day, a four-day and a six-day cruise every week.

In addition to trips to other lake ports boats will cruise the Chicago shores every evening for a view of the illuminated fair grounds. The Chicago Roosevelt Steamship lines will have daily service to Michigan City, St. Joseph, South Haven and excursions down the Chicago river and canal to Lockport, Ill. Great Lakes Transit Corp. will double its service, with two seven-day cruises weekly to eastern points in addition to short trips to Mackinac islands. Chicago. Duluth & Georgian Bay line will have seven and four-day cruises, while the Detroit & Cleveland Navigation Co. will have sailings every Monday, Thursday and Saturday to Mackinac, Detroit, Cleveland, Buffalo.

Personal Sketches of Marine Men

Francis Russell Hart, President, United Fruit Co.

By Ben K. Price

HE IS the third man to fill this office in thirty-four years of the company's existence, now largest of its kind in the world.

AS DIRECTOR and member of the executive committee since 1901, he has taken an influential part in the company's development.

TRAINED as an engineer, with long experience as a financier, he is familiar with all of the far flung activities of this organization.



ENGINEER, financier and man of letters rolled into one—such is Francis R. Hart, recently elected president of the United Fruit Co., Boston, as noted in February issue of MARINE REVIEW. In addition to this rare combination of implied attributes, Mr. Hart brings to his new position many years of actual experience in the fruit business and high managerial ability.

Mr. Hart is the third president in the 34 years of the United Fruit Co.'s existence. The new president succeeded Victor M. Cutter, whose administration lasted from 1924 until Jan. 10, this year, when he resigned to become chairman of the board. Mr. Cutter, in turn, succeeded Andrew W. Preston, the first president, who died in office in 1924.

Under the capable management of these men the United Fruit Co. has grown from an organization which ran a few ships for the Boston banana trade back in 1899 to a \$250,000,000 corporation, with 103 ships on the high seas, 67,000 employes and with farms in nine Latin American countries which, if assembled in one place, would equal in size twice the area of Rhode Island.

Indicative of the scope of the company's operations, it is interesting to note that of the 3,482,042 acres owned and leased by the United Fruit Co. in the tropics, 523,577 acres are cultivated, with approximately 127,000 acres in bananas, 103,900 in sugar cane, more than 39,000 in cocoa and 7650 in coconuts. Its pastures comprise about 120,000 acres, and town sites, roads, lots and fire lines, about 55,000 acres.

The company's fleet of 103 ships aggregate more than 455,000 gross tons, and include six new mail ships one placed in service in December 1931, four during 1932 and one put in operation in February, this year. Last year the fleet carried 44,489 passengers, 540,004 tons of general cargo and 146,810 bags of mail, in addition to transporting 1,124,188 tons of company fruit and other products.

Reflecting further the company's wide ramifications are 1760 miles of railways 642 miles of tramways and

approximately 8500 cars and 250 locomotives. The company owns more than 50,000 head of live stock, owns large sugar refineries, conducts extensive research activities and maintains a variety of public improvements which spell civilization in many of the sections in which they are located—water works, electric light and ice plants, laundries, churches and hospitals. (There are eight of the latter.)

For the direction of such enormous and far-flung activities Mr. Hart appears particularly qualified. He has been a director and member of the executive committee since 1901 and has spent some years in the tropical countries in which the company operates. For many years he has been an officer of the Old Colony Trust Co., Boston, and is a graduate of Massachusetts Institute of Technology.

One of his first ventures into the tropics was shortly after his graduation from Massachusetts Institute of Technology when he went to Jamaica to engage in reclamation and development of agricultural land. Later he went to Colombia, South America, where he took a hand in railroading and became general manager of the Cartagena-Santa Marta railway.

Mr. Hart is the author of a number of books, including, *Admirals of the Caribbean*, *The Disaster of Darien* and *The Siege of Havana*. He is a member of many societies, including the American Antiquarian society, American Academy of Arts and Sciences, the Massachusetts Historical Society, the Colonial Society of Massachusetts and Odd Volumes club of Boston.

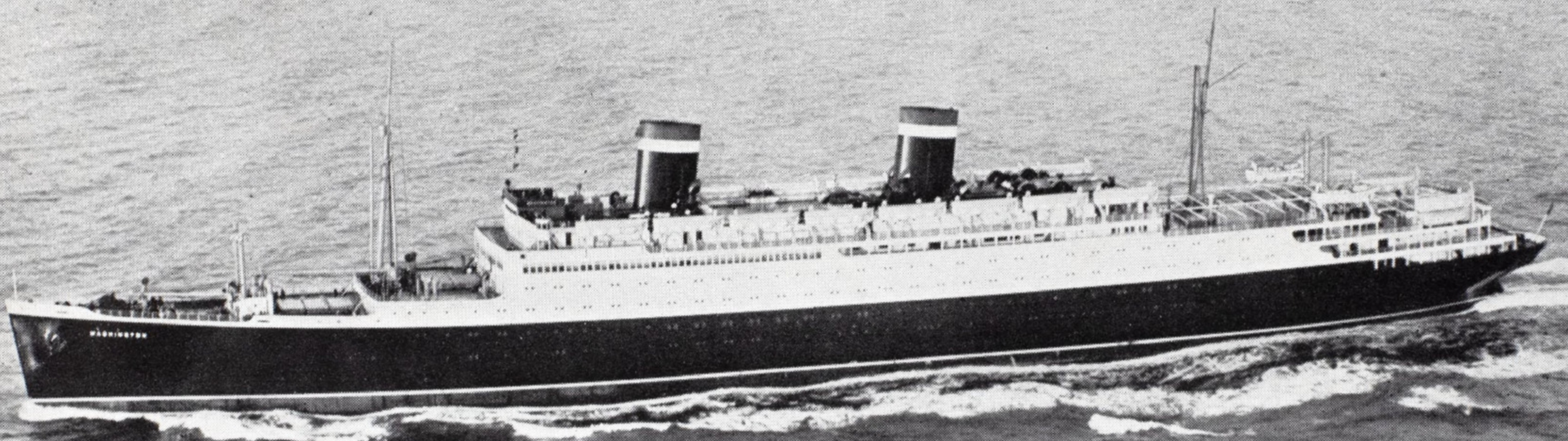
He is a fellow of the American Geographical society, the Royal Geographic society, Imperial Institute of London, Pan-American society and China society. His clubs include the Somerset, St. Botolph, Exchange, Union and University clubs and Grolier society of Boston; India house, New York; and the Royal Societies club of London.

Mr. Hart resides in Boston, on upper Beacon street, almost in the shadow of the golden dome of the state house, a New Englander, born and bred.

Marine Review

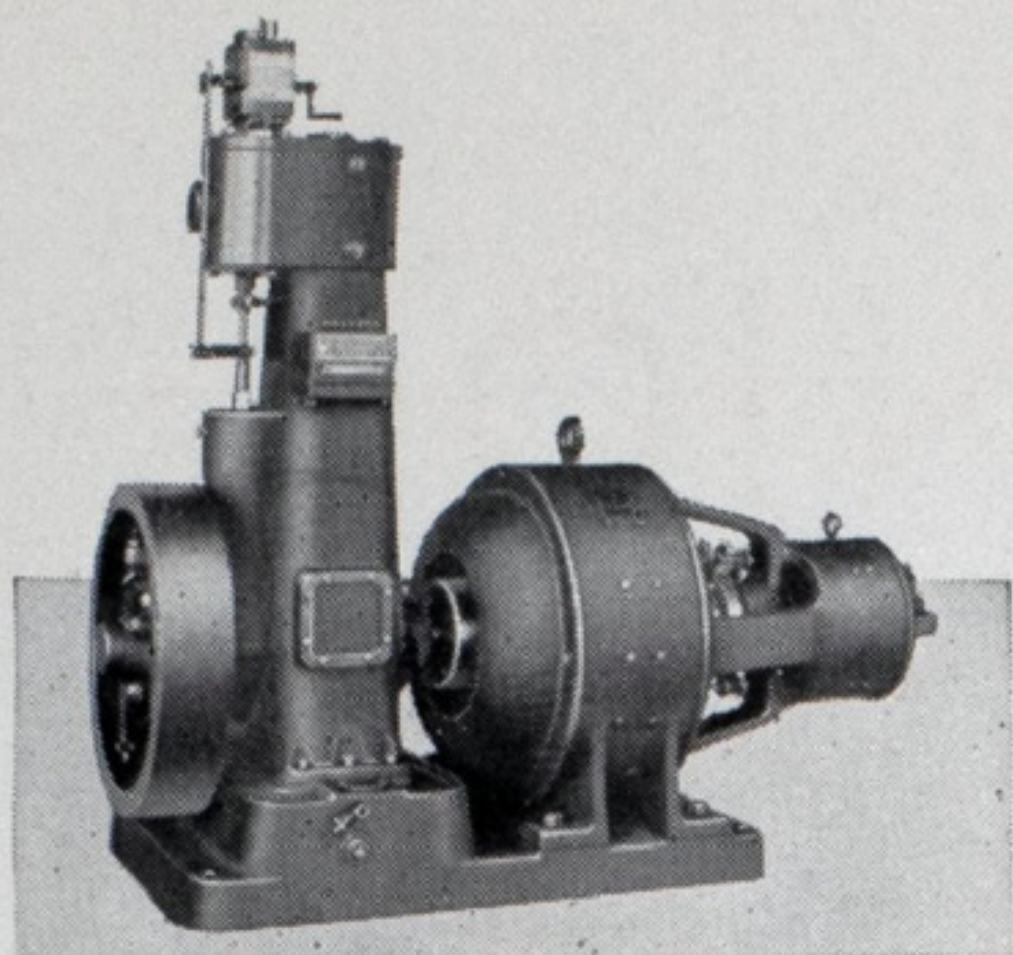
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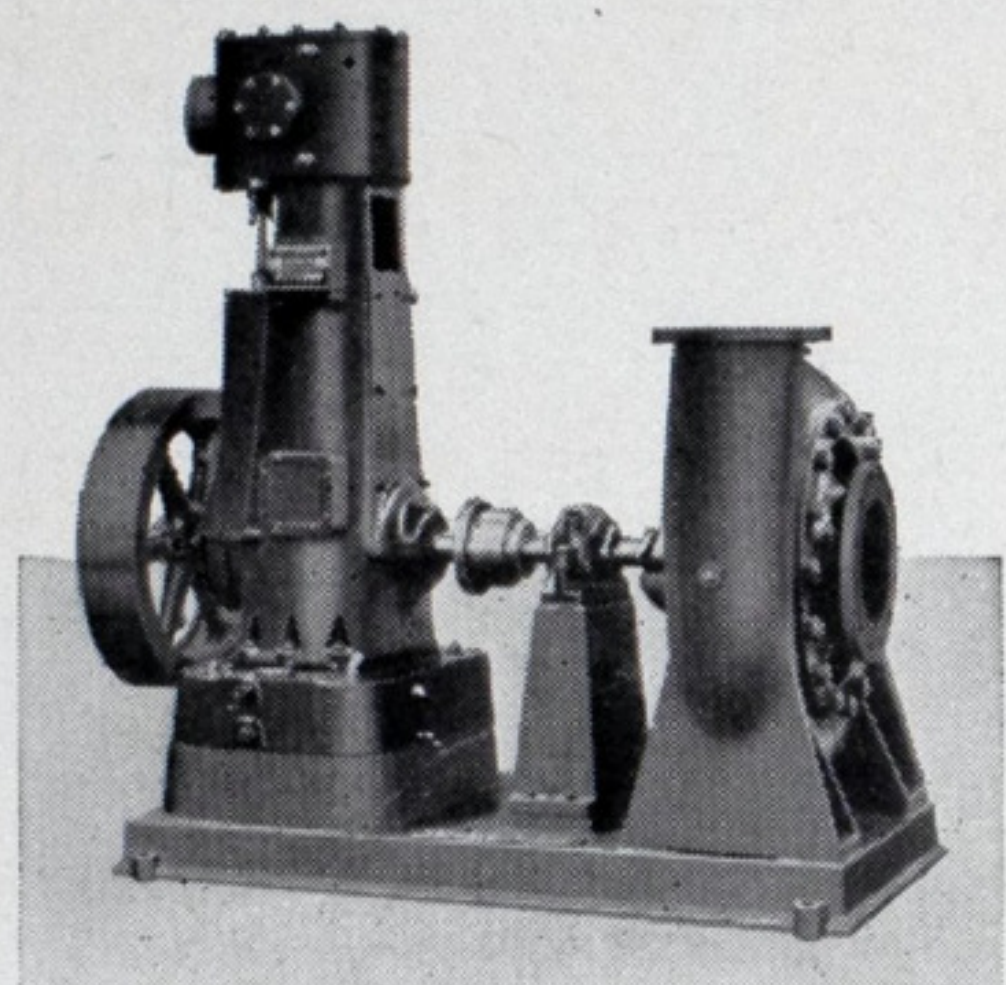


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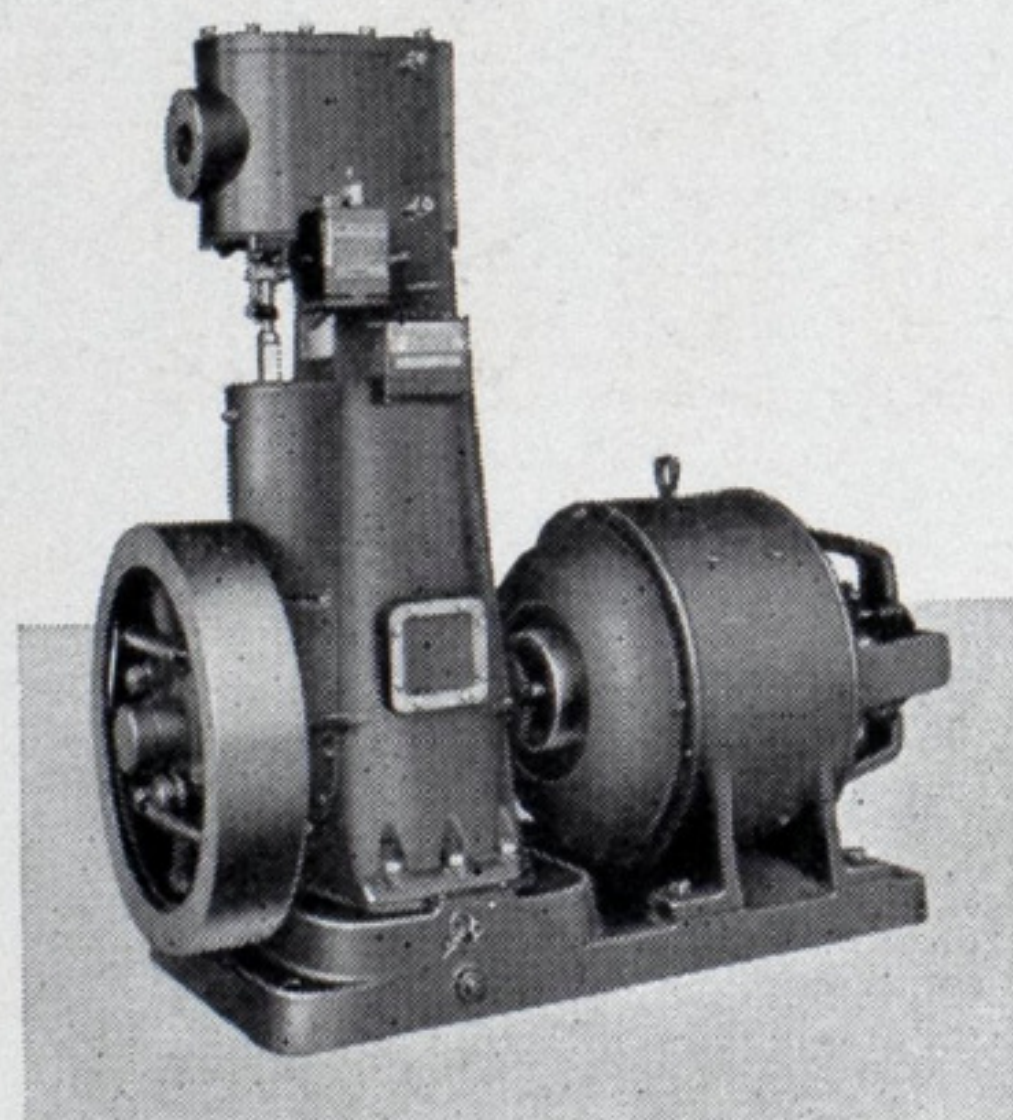
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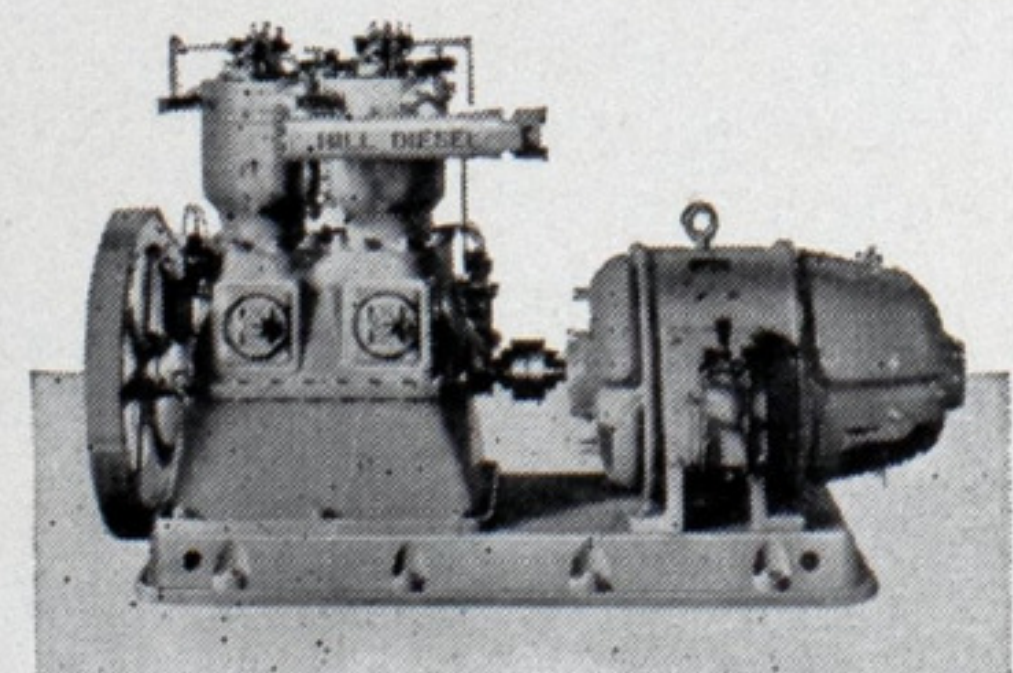
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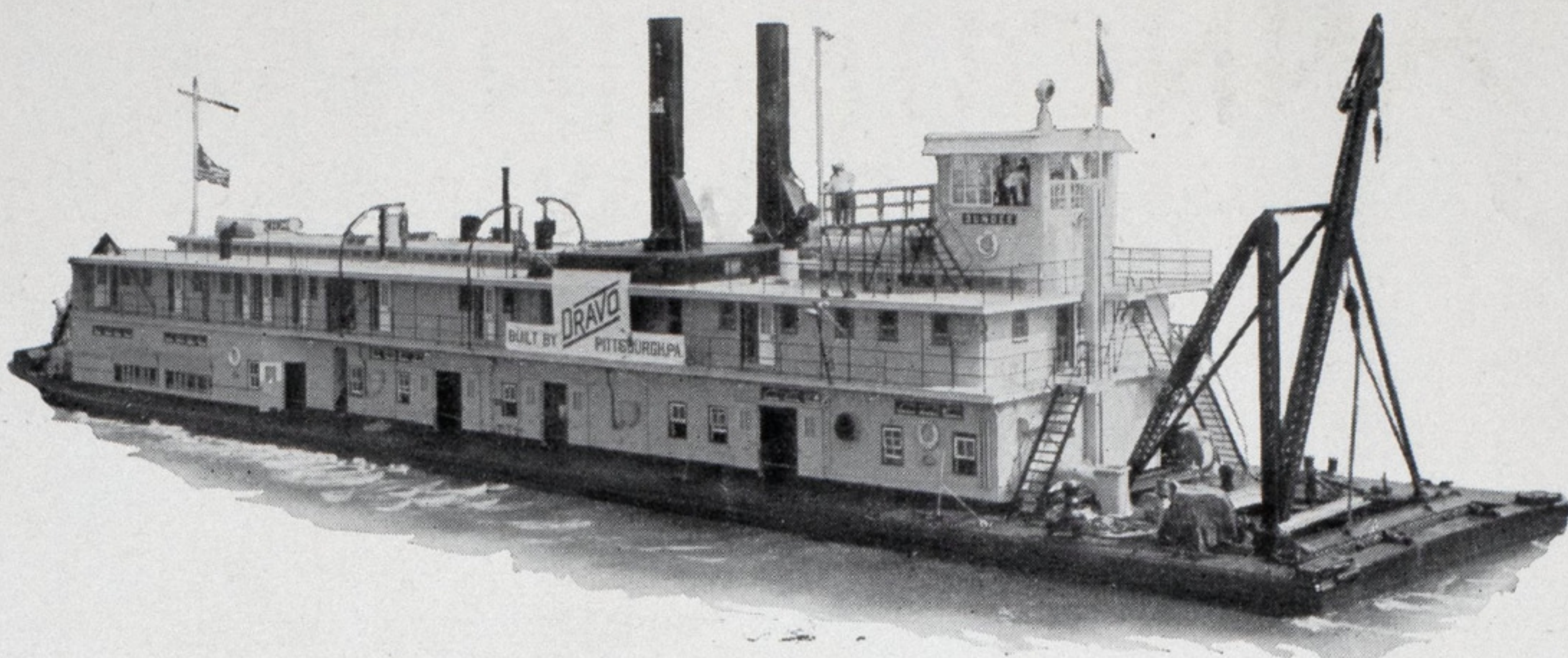
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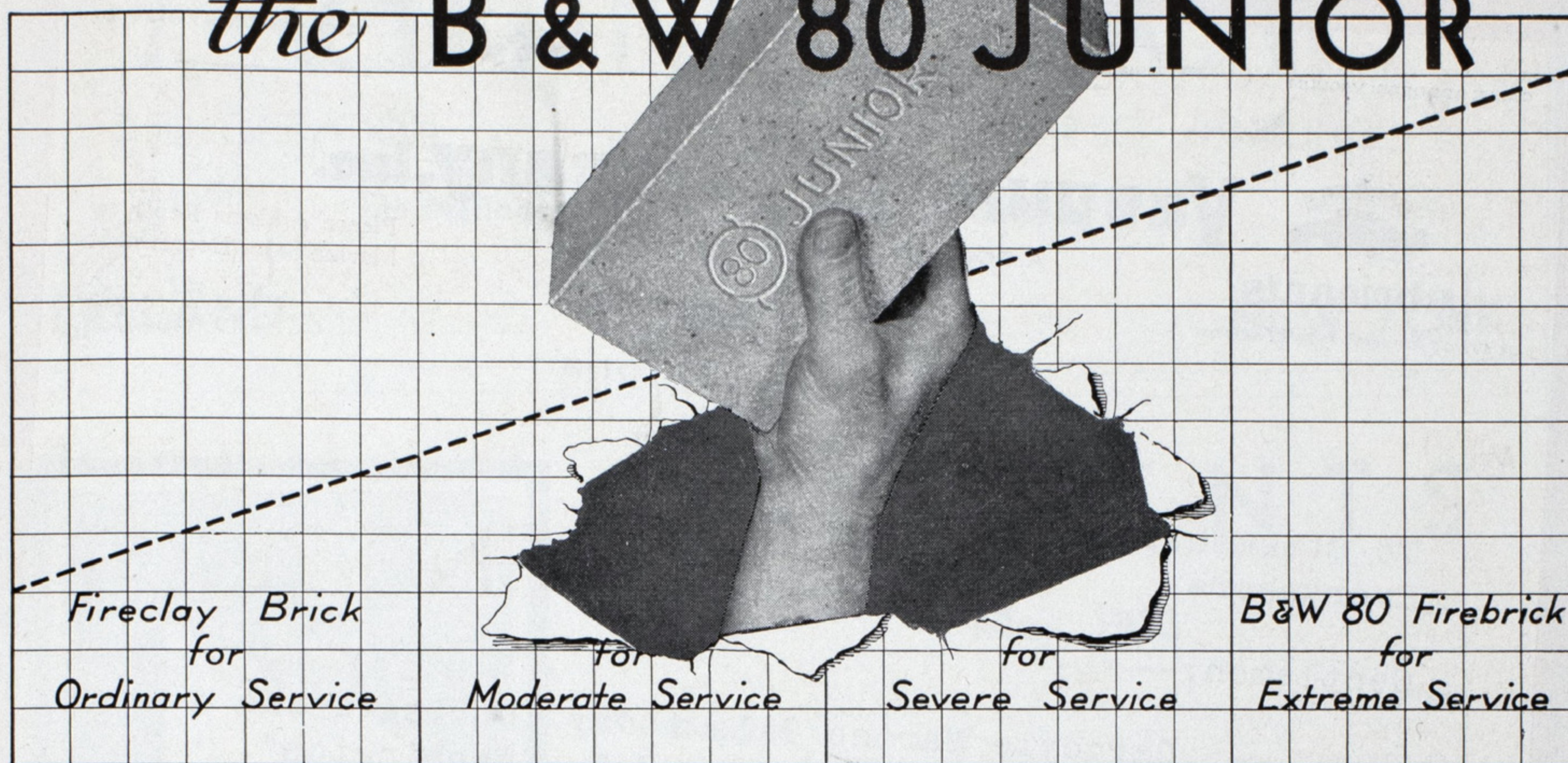
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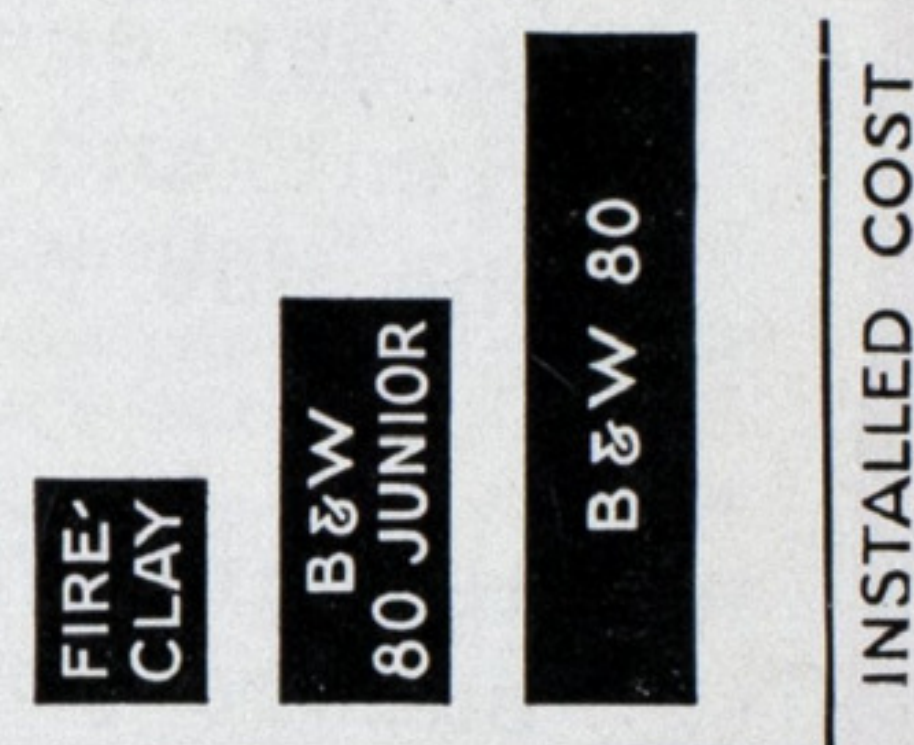
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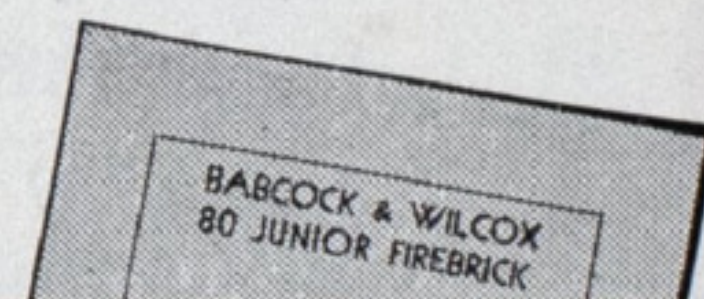
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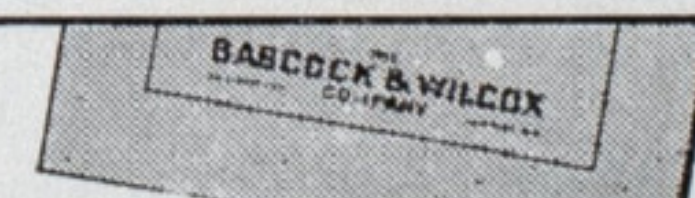
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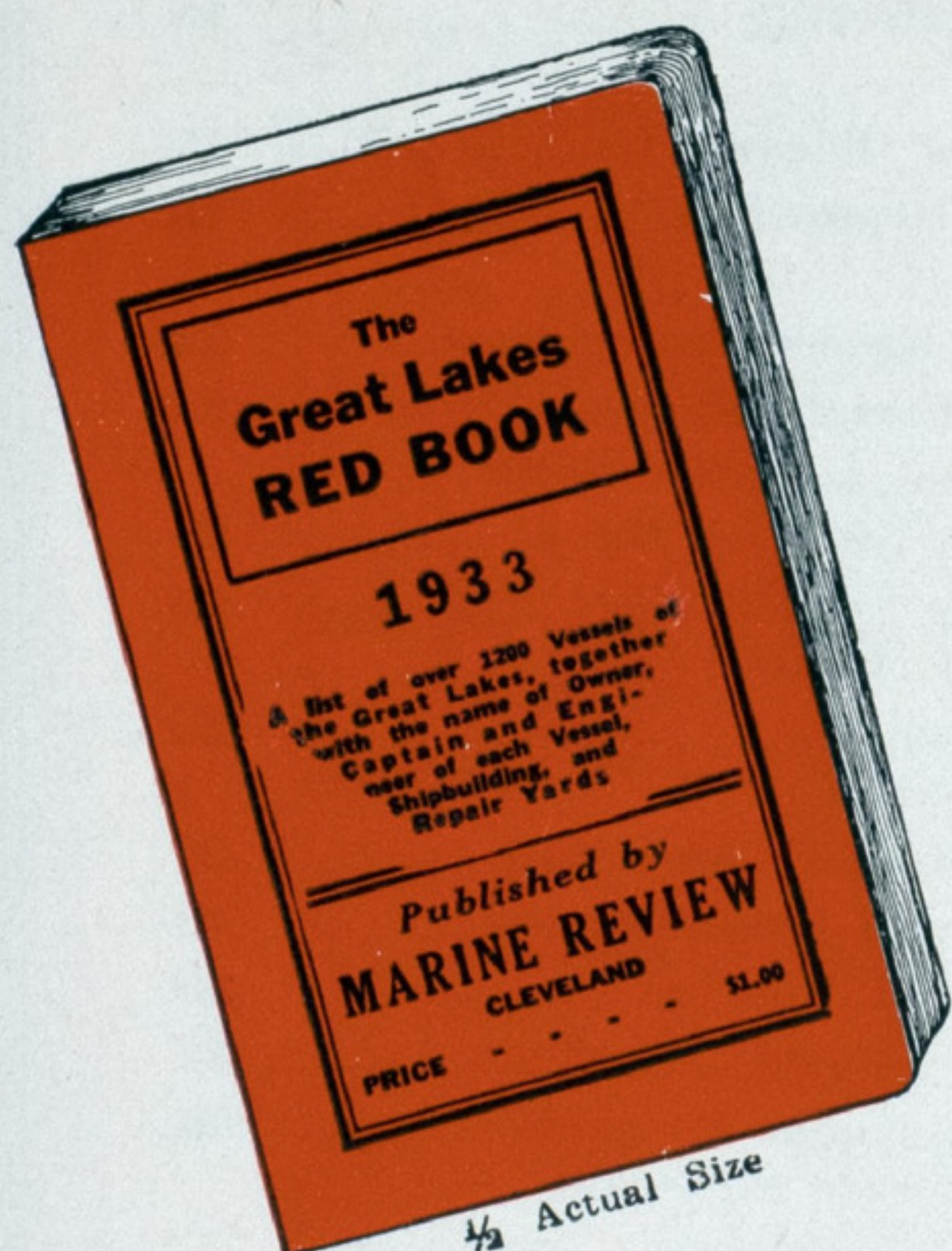
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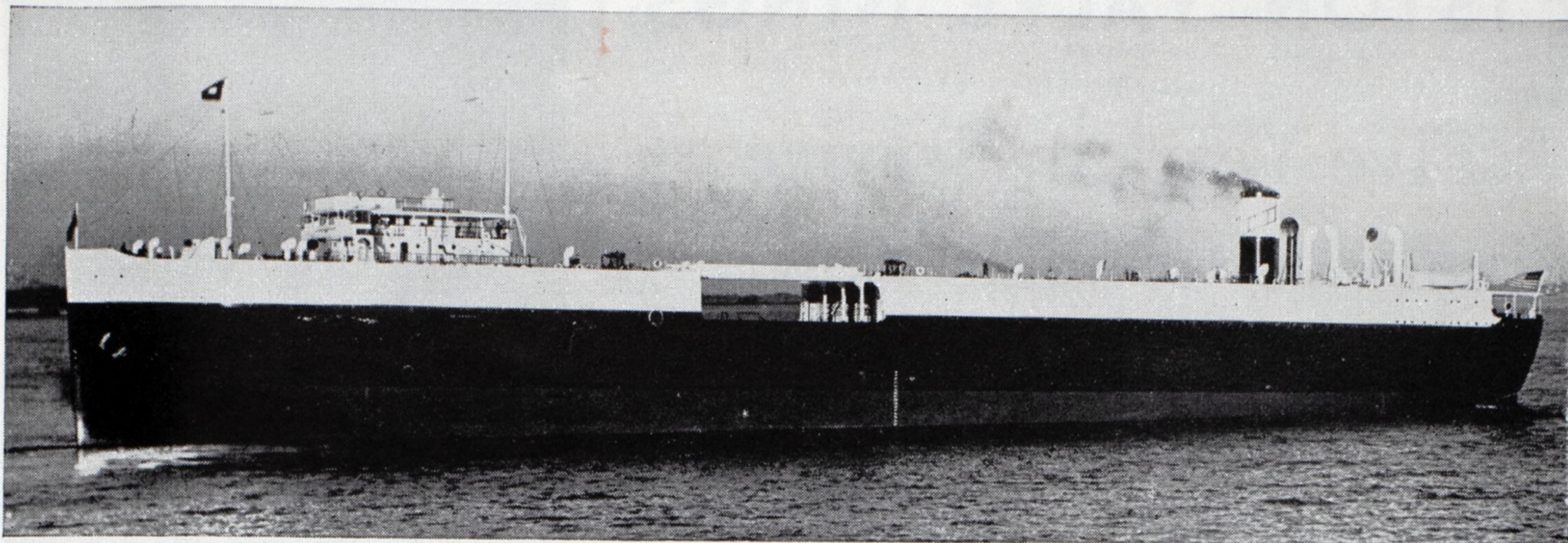
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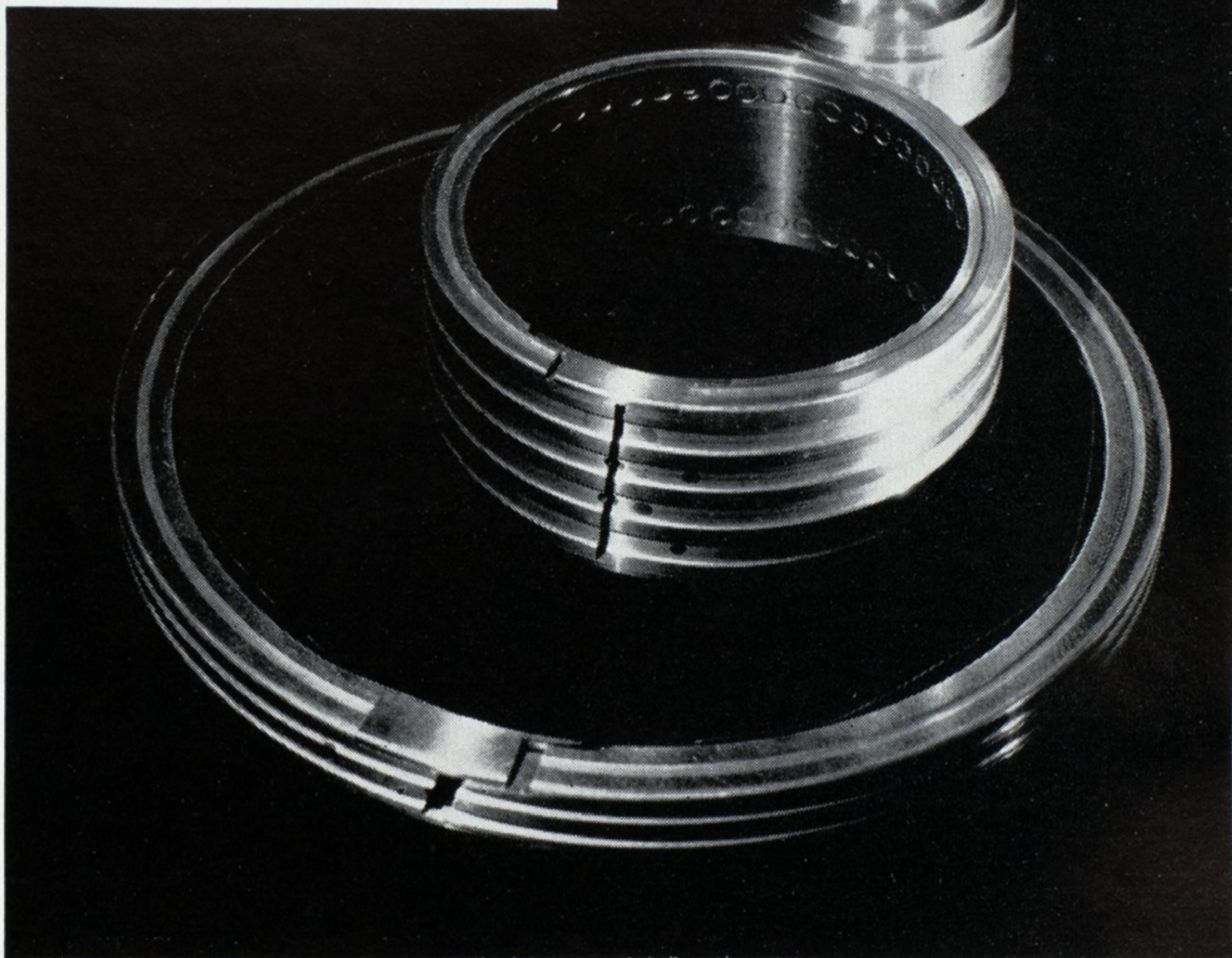
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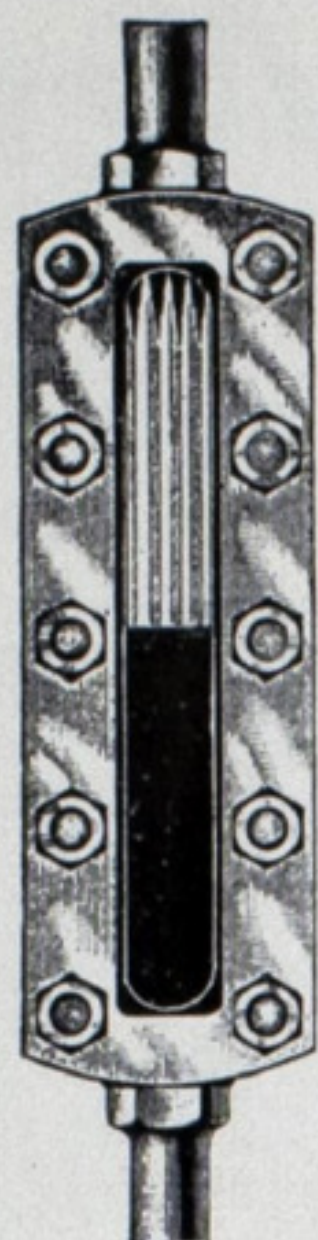
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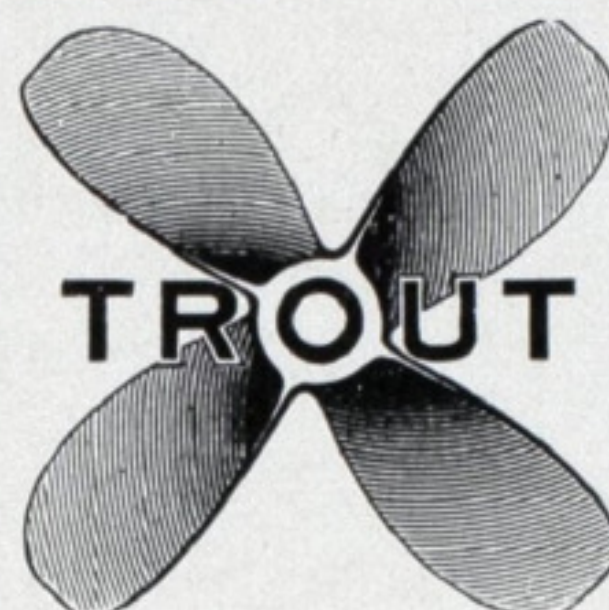
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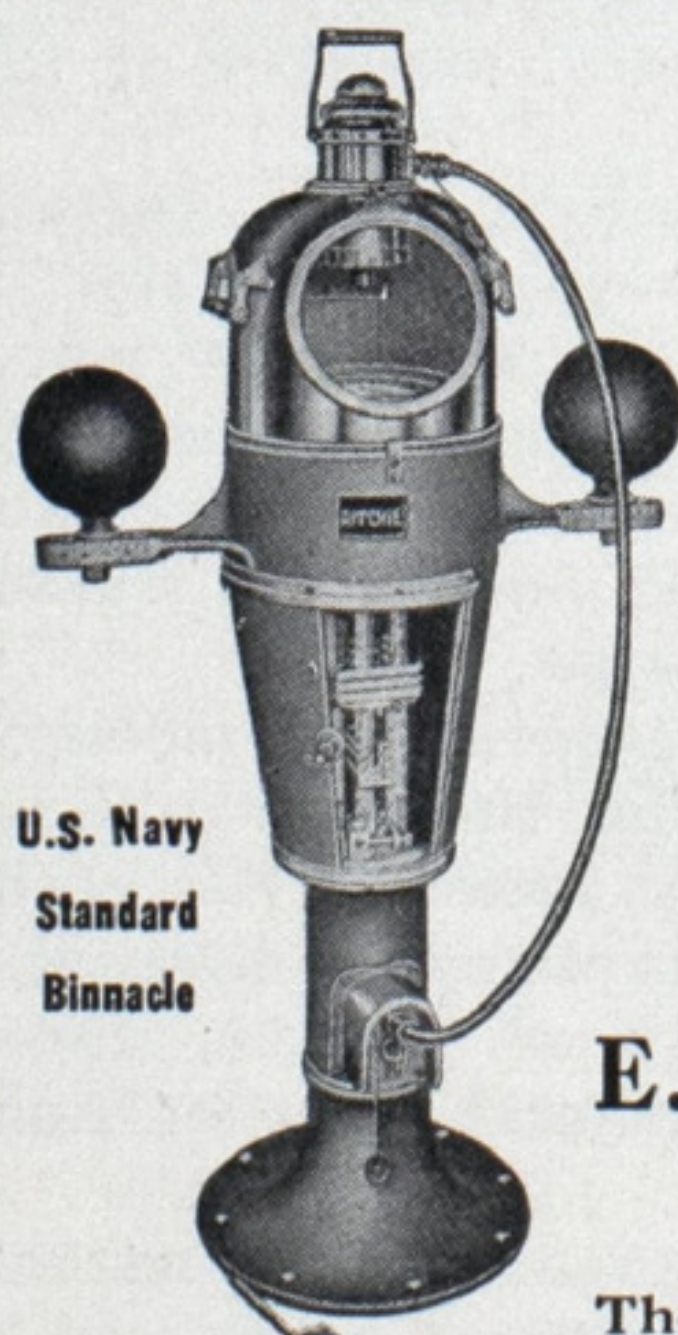
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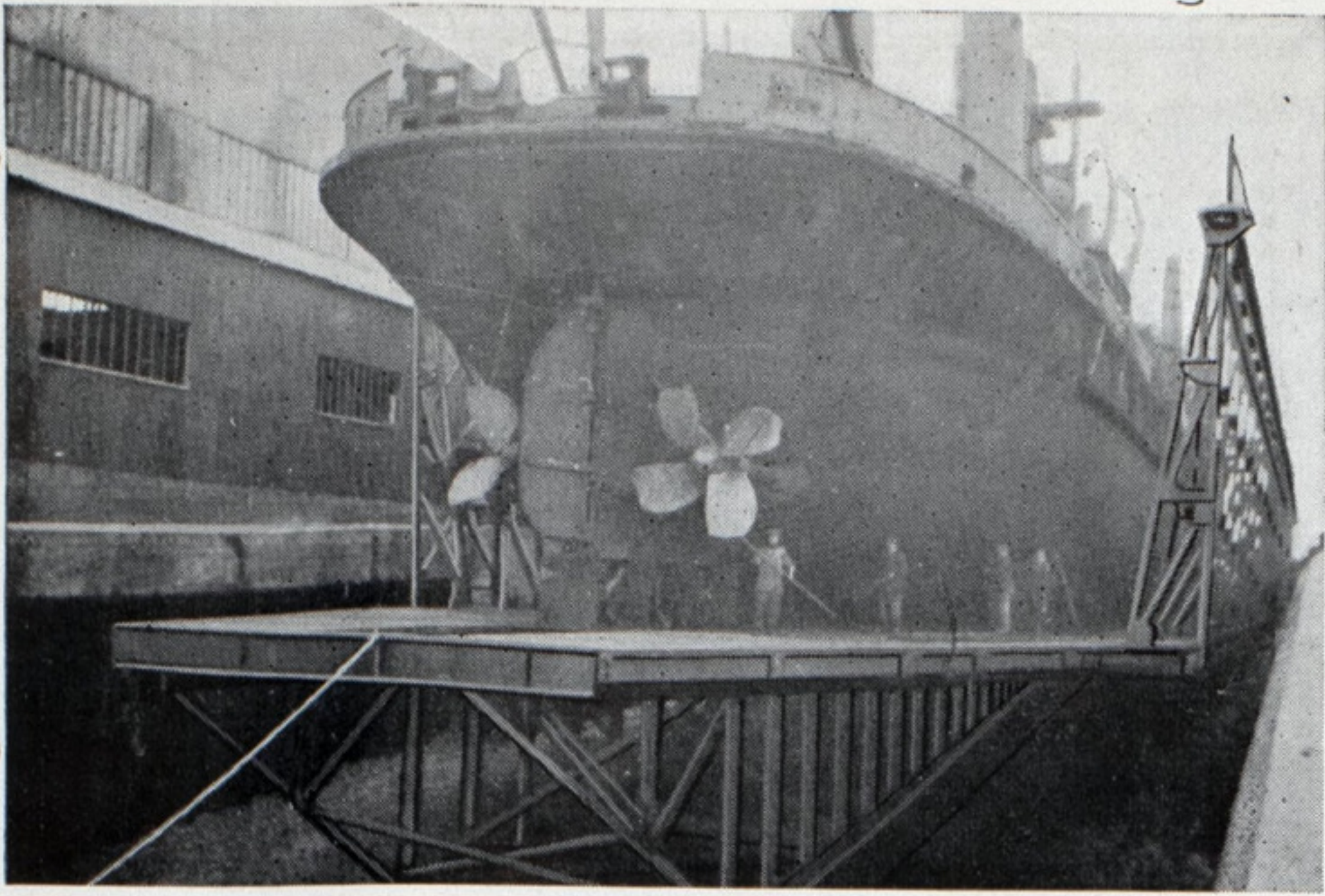
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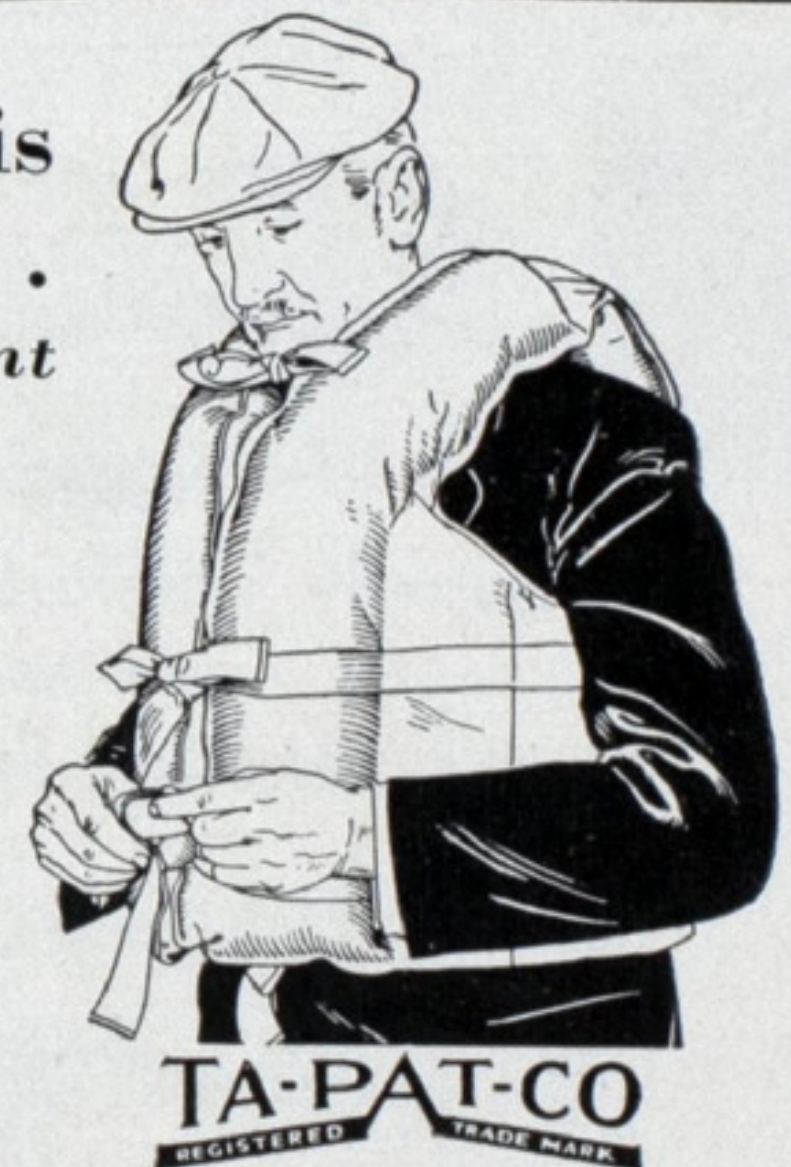


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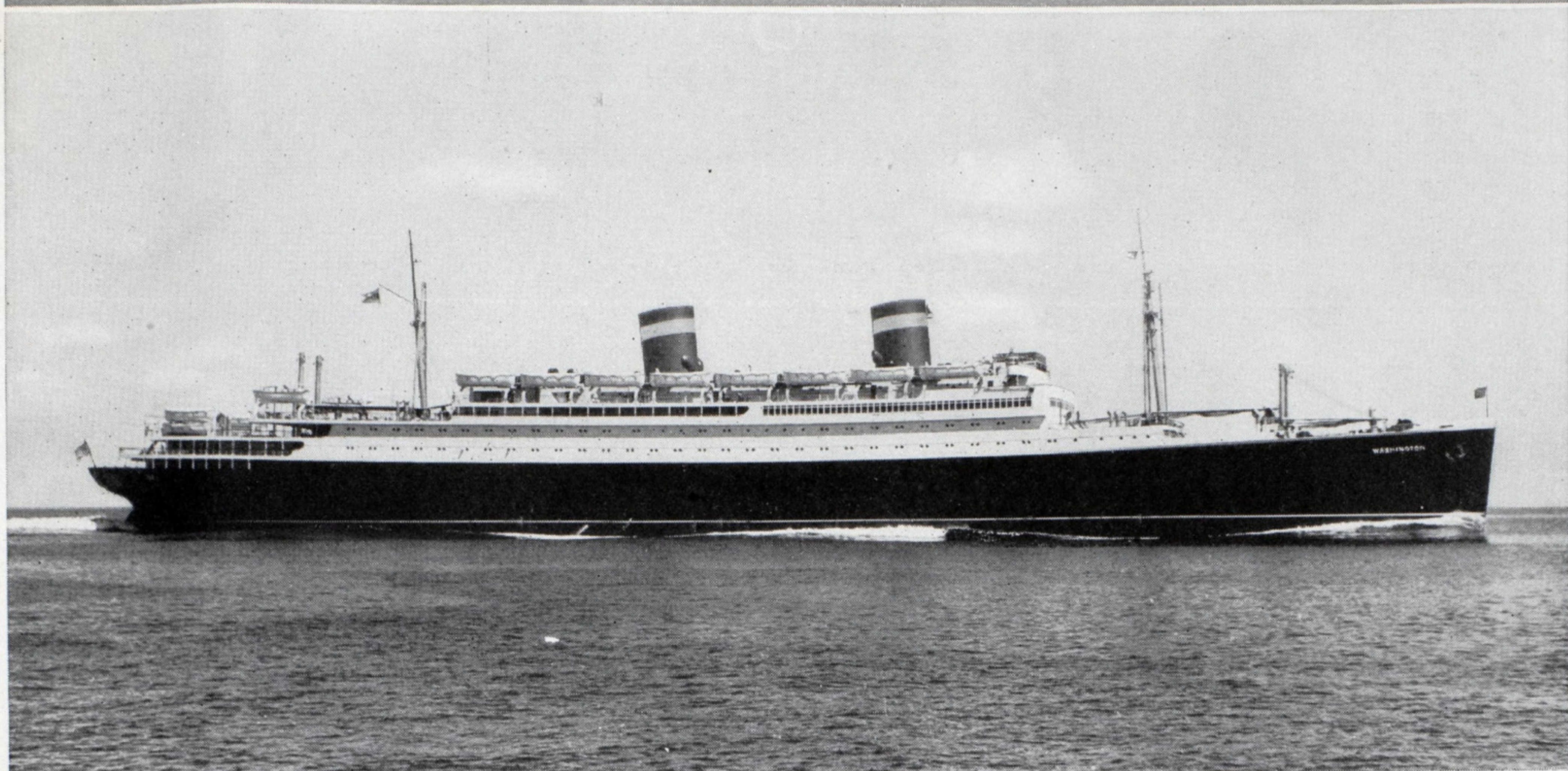
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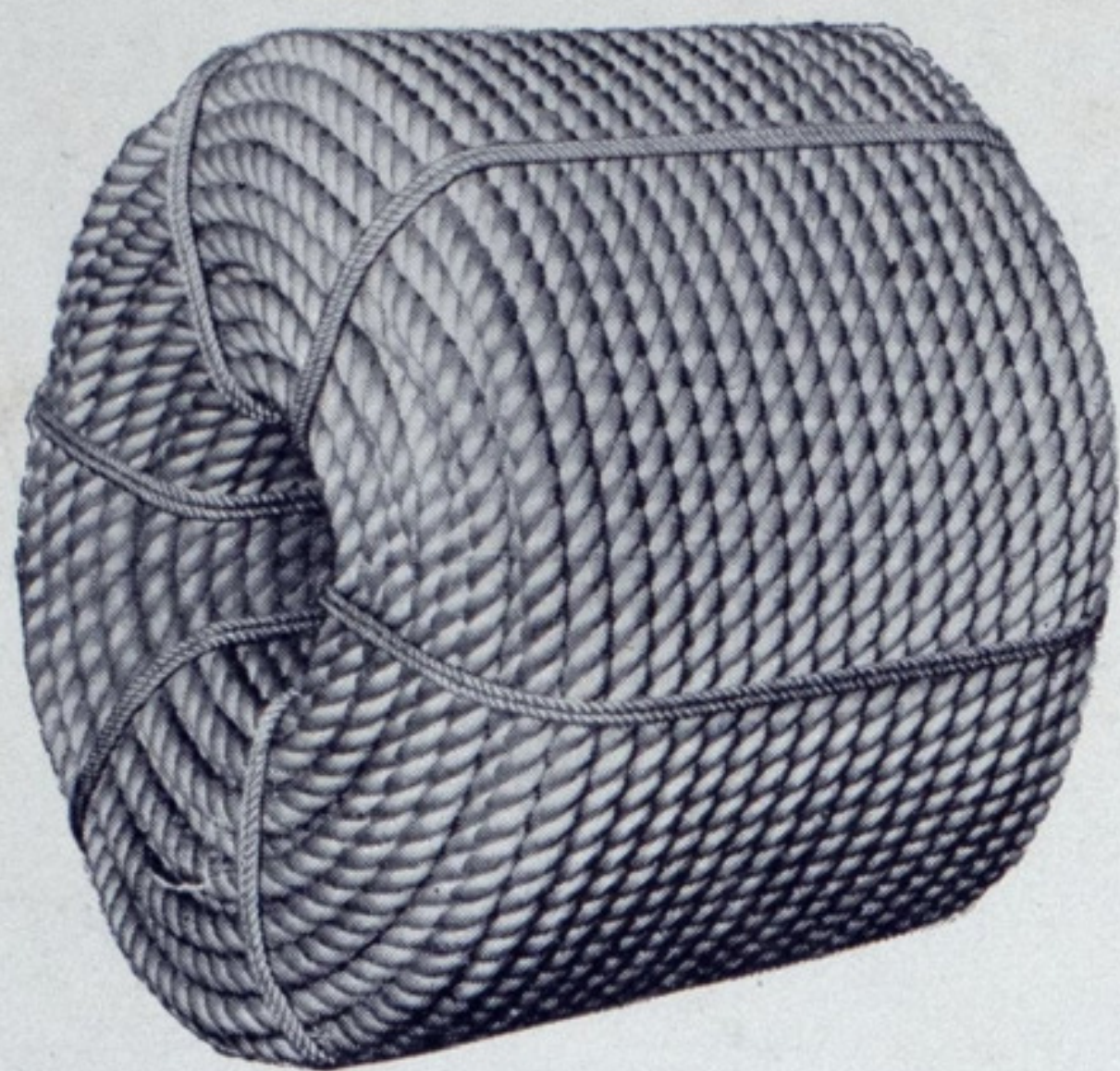
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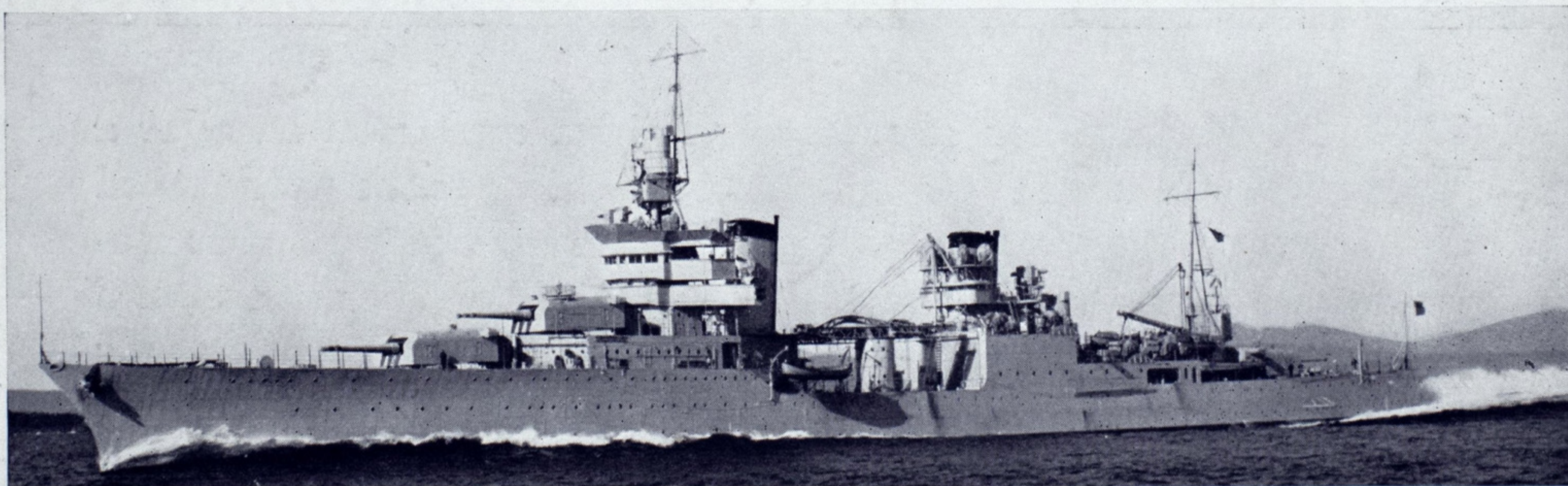
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